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Before You Start

Before you go to work, here are some important instructions about safety, required tools and supplies, and use of the installation report and checklist.

Safety Review

Installing the UroView 2800 involves moving and lifting heavy equipment, and it involves connecting electrical power supply lines. Utilize your training and common safety practices to watch for and respond to hazardous conditions. Know how to adequately protect yourself and others from injury.

Warning Locate the service panel to the room and verify that all necessary breakers are off and locked out before wiring the UroView 2800 system to facility power at the main junction box.

Radiation Safety

The UroView 2800 system can be operated only by those who understand radiation safety and use of X-ray equipment. Watch that nothing falls against the X-ray footswitch or the X-ray control panel, including driving the image intensifier assembly or Splash and Crash into the footswitch. Any such action could produce unplanned X-rays.

Warning Never operate this device without closing doors and wearing lead-lined clothing.

You are in charge of ensuring that everyone at the installation site is wearing protective clothing and shielding is adequate when X-rays are taken.

Awareness of Controls

Remain aware at all times that objects do not fall against or rest on the controls, that the image intensifier assembly or Splash and Crash is not driven into them, or that they are not stepped on. Inadvertent activation of any of the controls could cause unintended X-rays or table movements.

Collision and Pinch Point Hazards

Trace the path from the receiving dock to the installation site so that you are aware of slopes in walkways, width of doorways and length of elevators (must be at least 80 inches). Do not move the system alone. Do not prevent the system from rolling by blocking it with your body.

Be constantly aware of your hands, fingers and toes in relationship to system components during installation, particularly when removing the system from the pallet. Remain constantly aware of the following collision and pinch points:

- Image intensifier assembly and floor or any object or person
- Table and floor or any object or person
- X-ray head cover (during installation)
- X-ray head and any object or person
- Table lift arm opening (roller shade area) and fingers or other objects
- Table accessory rails and fingers or other objects
- Area between the shelf and electronics cabinet
- X-ray arm and the table, X-ray head, X-ray arm, cable cover (if not properly installed) and any other object or person

Electrical Safety

Observe all the electrical safety guidelines provided in your training and education to avoid serious injury or death from electric shock. Do not bypass, jumper or disable safety interlocks unless otherwise specified herein.

Areas where hazardous voltages exist include:

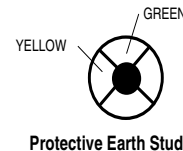
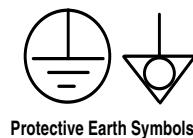
Incoming service	400-480 VAC, 200-240 VAC
Generator Power Assy (top plate)	400-480 VAC, 200-240 VAC
Tower F1 and T1 power input	200-240 VAC
Tower Electronics Slide Assy (Backpack)	
TB1, TB2, TB3	200-240 VAC, 115 VAC
Power Distribution PCB	115 VAC
PS4	115 VAC
Transformer T2	115 VAC
Table/Generator Interface PCB	115 VAC
Workstation	220 VAC
X-ray arm TB5 (Monitor power supply)	115 VAC
X-ray control console	115 VAC
X-ray tube voltage cables	130 kV
Room interlock/incandescent lights	100-120 VAC

Be familiar with the system and observe the two person rule when working near lethal voltages. Anyone assisting in the installation should know the location of the main power breaker to the room and be prepared to turn it off in an emergency. All persons working on the installation project must thoroughly know the tagout/lockout requirement.

High voltage cables and capacitors can retain a charge even when all power is removed from the system. Discharge the high voltage cables against the chassis ground whenever handling them. Some high energy capacitors in the system should also be shorted to ground to prevent a burn hazard.

Protective Earth Ground

One of the following types of earth ground studs is located on system components. The table and generator are marked with protective earth symbols shown to the left below. The workstation is marked with the international earth ground symbol shown to the right below.

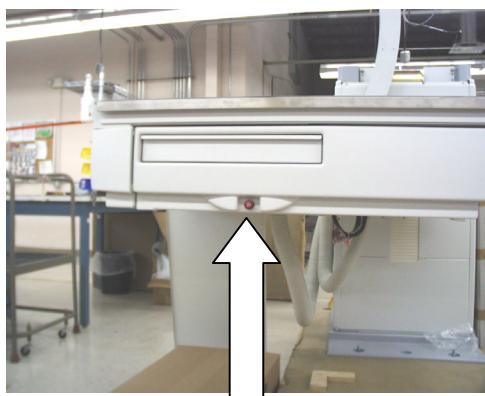


Ground Fault Alarm

If the room wiring contains a ground fault alarm and the alarm goes off, use your knowledge of electrical safety to turn off the system and components. Have the facility electrician correct the problem before continuing.

Fast Stop

Once the system is operating and in the event a malfunction causes uncommanded X-rays or table movements, press one of the red Fast Stop buttons. This will stop all X-rays and motorized movements. Fast Stop buttons are located on the outer side of the table and on the X-ray control console.



FAST STOP switch located at table side



FAST STOP switch located on X-ray control console

Fast Stop Button Locations

X-ray Tube, Hot Oil Hazard

Although unlikely, it is possible to overheat the X-ray tube during beam alignment and calibration procedures. Overheating the tube can rupture the tube housing and cause hot oil to leak. This can result in scalds or burns. Pay attention to any overheat warning messages that may appear on the displays. An alarm sounds after every five minutes of continuous exposure. At all times, the control panel displays accumulated exposure time, as well as any heat warning.

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80	1.56	6.5	... WILL OVERHEAT		
kVp	Accumulated Exposure Time	mA	kVp	Accumulated Exposure Time	mA

To stop the alarm, press the Alarm Reset key on the control panel. To reset the accumulated exposure time, press the **Alarm Reset** key for five seconds. Do not overheat the tube.

Explosion Hazard

The system must never be operated in the presence of flammable anesthetics, other flammable liquids, explosive liquids, vapors or gases. Liquids, vapors and gasses can be ignited by electrical arcs occurring during the normal operation of electrical switches and circuits.

Warning If flammable substances are observed before the system is turned on, DO NOT TURN IT ON. If flammable substances are observed after the system has been turned on, evacuate all personnel immediately. DO NOT TOUCH THE SYSTEM OR ANY OF THE CONTROLS.

If it is necessary to evacuate the installation site for any reason:

1. Evacuate everyone from the area.
2. Call for help.
3. Turn system and components off, if it is safe to do so.
4. In case of fire, use only a fire extinguisher approved for electrical fires.

Once the area has been evacuated, have the hospital's trained personnel correct the situation. This would include moving all volatile liquids to a storage area and ventilating the area.

Implosion Hazards

Monitor screens (CRTs) can shatter if struck or severely jarred. If shattered, glass will spray throughout the installation site. In addition, the internal glass coating can produce toxic dust or fumes. Avert this hazard by assuring that objects will not fall against CRTs during installation.

Due to high vacuum pressure in the image intensifier tube (II), the II may implode if struck or subjected to severe mechanical shock. There is little possibility of implosion when all covers, including the Splash and Crash cover are in place, but during installation, when covers are off, the possibility increases.

Energy Control Power Lock out

Observe all the Energy Control Power Lockout (ECPL) safety guidelines provided in your training and Chapter 5 of the EHS Manual to avoid serious injury or death. Do **not** perform or direct others to perform any work when you are unsure of the safety procedures to be followed, the condition of the equipment, or are aware of any potential hazards.

Lockout/Tag-out is essential for employee safety. Know the barriers to following proper ECPL procedures and how to overcome the barriers. Each field service engineer has the responsibility and the authority to apply ECPL procedures correctly and will be held accountable for the correct application.

When servicing/installing/de-installing equipment, always:

- Notify affected employees in the area that ECPL is being performed.
- Perform orderly shutdown of the equipment.
- Physically locate and operate energy-isolating devices needed to control the energy to the equipment to ensure isolating the equipment from the energy source.
- Affix lockout devices to each energy-isolating device.
- Be conscious of stored energies, capacitors, springs, and potential energy stored by gravity, thermal energy, etc. Before starting work, neutralize stored energy.
- Verify that all energy has been disconnected.

The employee who applied the lockout device must remove the lockout device.

If a lock is abandoned at the work site, follow the procedure outlined in the Abandoned Lock Removal section of chapter 5 (page 9) of the EHS Manual. It is extremely important to verify that no employee is working on the equipment.

Equipment Safety

Observe all the Tool Safety guidelines provided in your training and Field Service Manual Chapter 3 to avoid serious injury or death.

Ladders, hand trucks, and slings must be inspected prior to each use. A checklist is provided for each tool at the end of this Appendix. All checklists must be kept by field service engineers for one year. EHS or other Field Service employees will also perform these checklists on the basis of random annual inspection.

Unauthorized Modifications

Unauthorized changes or modifications to any part of the system could have hazardous consequences. Changes or modifications must not be made unless specifically authorized by GE OEC.

Accident Reporting

The following accident reporting procedure is provided for your information.

Injury and Illness Reporting: it is the responsibility of the employee to report all on-the job injuries and illnesses no matter how minor they may seem within 24 hours. All injuries and illness must be reported to your managers/supervisors, EHS specialist and GEMS Nurse.

EHS Specialist :Katherin Moody: (801)-536-4906

GEMS Nurse: Lynn Bickel: (414)- 647-4014

Regulated Procedure For Medical Device Failure: Regulation 21 CFR Part 803, requires that GE OEC submit a report to the FDA containing the following information in the event of an accident resulting in death or serious injury during use or service of its medical devices. If you have talked with Dispatch and it is necessary for you to file a report, report the following as soon as is practical.

GE OEC model and serial number.

Name and address of the person submitting the report, either you or someone else.

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Describe the event. Include whether any serious injury or death occurred, the number of people who were injured, and any related document--such as hospital or police--describing the reported event.

Indicate whether additional information will be submitted, and if so, when and by whom.

Mail the report to GE OEC.

Questionnaire for Ladder Inspection	Pass	Fail	Safety work order written	Taken out of service	Comments
1) Joints between steps and side rails tight					
2) Hardware and fittings securely attached					
3) Moveable parts free and operable					
4) Moveable bearings lubricated					
5) Safety feet operable and maintained					
6) Rope not worn or frayed					
7) Rungs and steps free of grease, oil, dirt, etc.					
8) Treated to prevent rust (except wooden)					
Inspected by:	ID#:			Date:	

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Questionnaire for Sling Inspection	Pass	Fail	Safety work order written	Taken out of service	Comments
1) Web sling marked or coded to show rated capacities for each type of hitch and type of material					
2) Salvage edges not split from webbing width					
3) No acid or caustic burns					
4) No melting or charring of any part on the sling surface					
5) No snags, tears, punctures, or cuts					
6) No broken or worn stitches					
7) No distortion of the fittings					
8) Check the hook for any damage					
9) Cable excessive wear and damage					
Inspected by:	ID#:			Date:	

Special Tools and Supplies

Power Tools

Hammer drill	Soldering gun, assorted tips, solder
27/32" concrete bit	Shop vacuum

Common Hand Tools

Cable puller (fish tape)	Tape measure
Hack saw	Allen wrenches
Wire crimpers 3 ga.	Wire cutters
Rat tail file	Sledge hammer, small and large
Bristol driver tool (00-900920)	Vise grips
Medium and large channel locks	Pliers and wire cutters, tin snips
Utility knife	Rawl #6311 5/8-inch setting tool
Screwdrivers, flat-edge and Phillips	10 oz.-inch torque wrench
Scrapers	175-foot lbs. Torque wrench
Combination wrenches	5 inch-lbs. Torque wrench

Special Tools and Equipment

High voltage cable wrench	Light meter
Digital multimeter and probes	Converging line pair resolution tool
Pausch Serial Extension Cable	Perpendicularity tool
Digital level	Radiographic Alignment Tool
Laptop computer	3 copper filters (00-877682)
Film densitometer	Static wrist strap (00-800221)
AEC calibration phantom (5 plexiglass blocks)	RUS Software
Dosimeter	RUS Cable

Assorted Hardware and Supplies

Wall anchors	Duct tape
Metal screws, nuts, bolts, washers	Toggle bolts and lag screws
Tubing, plastic, 3/8 in x 8 in long	Tungrease, p/n 00-902208-01

Using the Installation Checklist

Follow the installation procedures of this document in the order written. Report your results in the UroView 2800 Installation Checklist. As you finish each procedure below, find the corresponding title in the Checklist, and enter the information in the applicable space provided.

The Checklist form has been designed using the Microsoft® Word 2000 form tool and should be completed on-line. The on-line form contains three types of information fields: text/number fields, checkboxes and pull-down menus.

You can navigate the form using the tab key or by using your mouse. We recommend that you use the mouse. The steps should be completed in a vertical order. The tab key moves the cursor horizontally.

For text fields, type in the requested information, such as hospital name, etc. For checkboxes, place the mouse cursor on the checkbox and click. This will place an X in the checkbox. For pull-down menus choose the appropriate selection when it displayed; verify that it is present when you close the field.

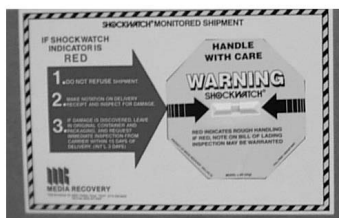
To make the on-line Checklist template available to MS Word, save the template in the Microsoft Office Template directory.

Unpacking the System

This section contains instructions about shipping damage inspection, uncrating, and depalleting.

Shipping Container Damage Inspection

Before unpacking, inspect the shipping enclosure/boxes for damage and report to the shipper if available. Each container includes a Tilt and Shock Watch label. Inspect these indicators for excess shock or tilt during shipping and handling. If you find shipping damage or that the shipment is not complete, call GE OEC Sales Support at 1-800-328-9300. Note any damage in the Comments section of the Checklist.



Tilt Indicator

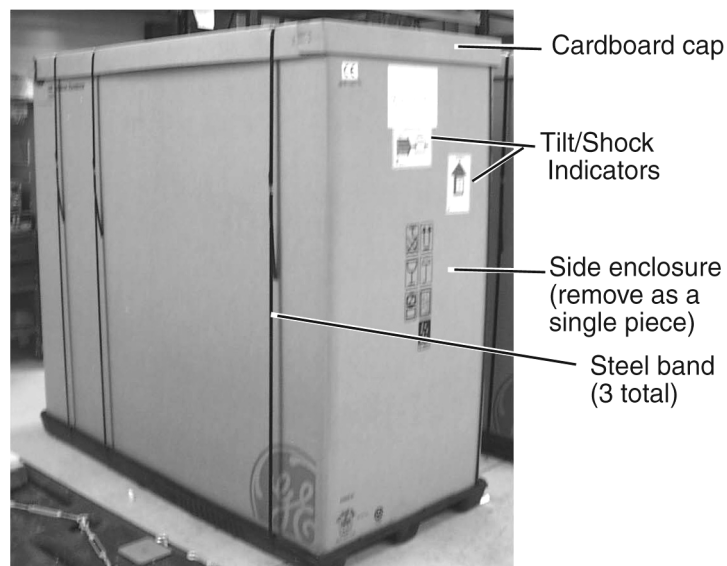


Shock Indicator

Uncrating

To uncrate, follow these steps:

1. Remove the banding from the workstation, tower/table, and generator shipping enclosure/pallets (see figures, next pages).



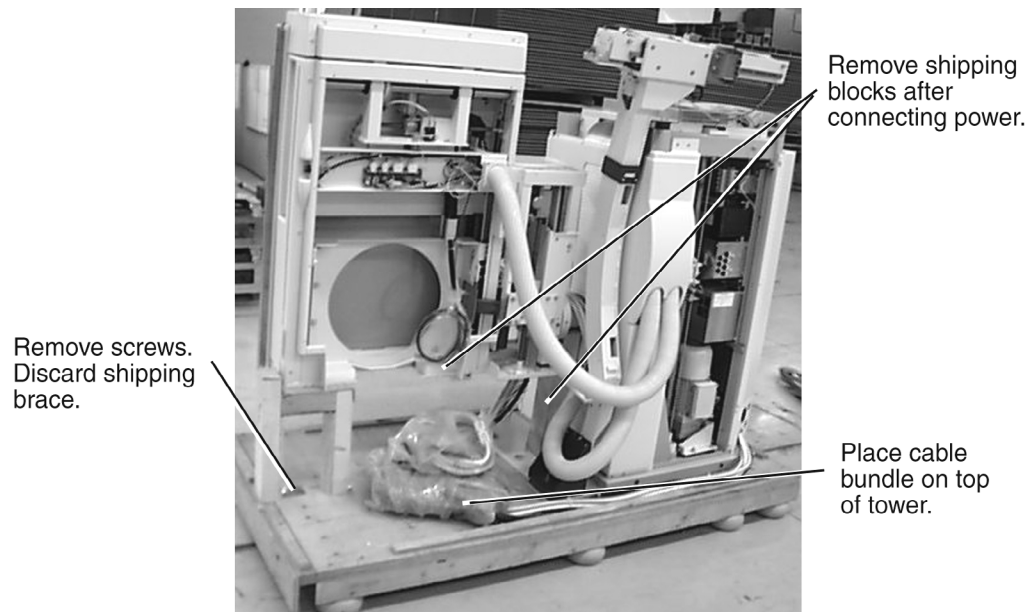
Tower/Table Shipping Enclosure

2. Remove the ramp from the top of the workstation and generator enclosures (see illustrations below).
3. Remove the cardboard cap and lift the cardboard from the top of the workstation, generator, and tower/table enclosures. Discard cardboard items.
4. Prepare tower/table for depalleting, as shown in the following illustrations.

Note: *You can't fully remove the Tower Lower Rear Cover, because the cable bundle is threaded through it. Just slide it up the cables a little way.*

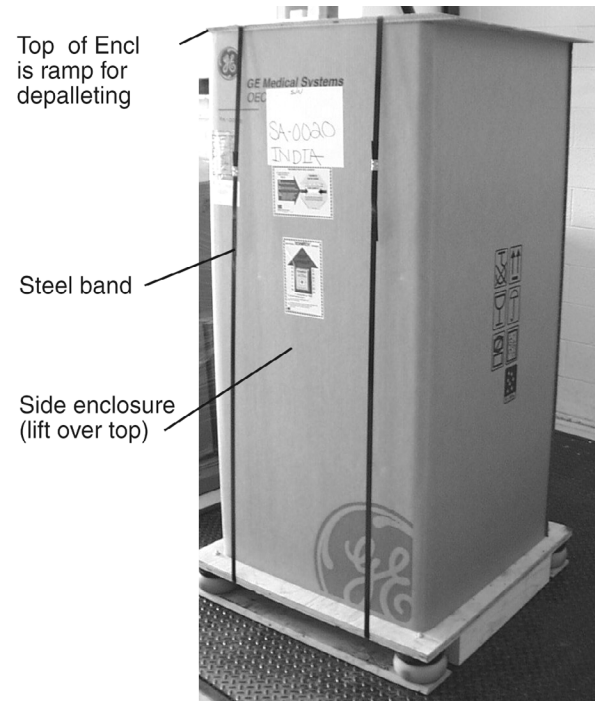
Uroview 2800 Installation Procedure

5. Remove the wrapping material, if any, from the workstation and the generator.
6. Remove and discard shrink-wrap from pallets containing shipping boxes.

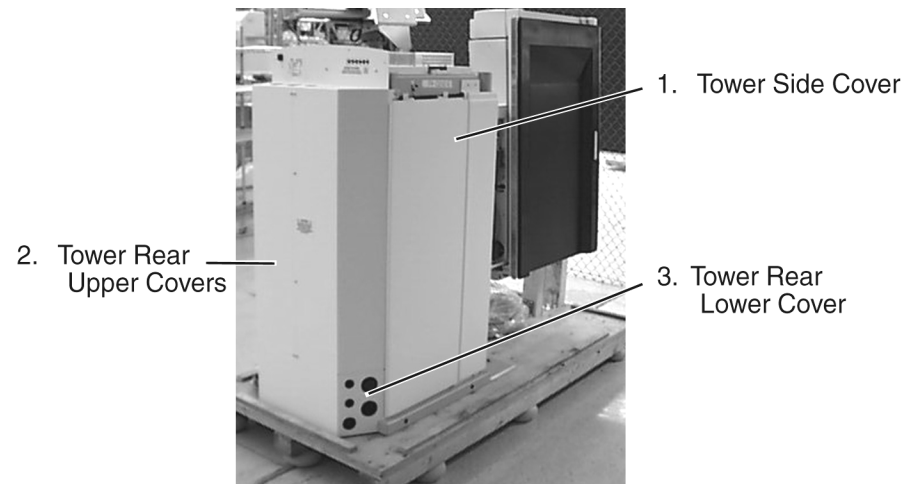


Preparing for Depalleting the Tower/Table

Uroview 2800 Installation Procedure



Workstation and Generator Shipping Enclosures



Cover Removal Before Depalleting

External Damage Inspection

Inspect workstation, generator, and tower/table as required by the Checklist.

Depalleting

The following procedures are for depalleting the workstation and tower/table. Record the results of the depalleting in the Checklist.

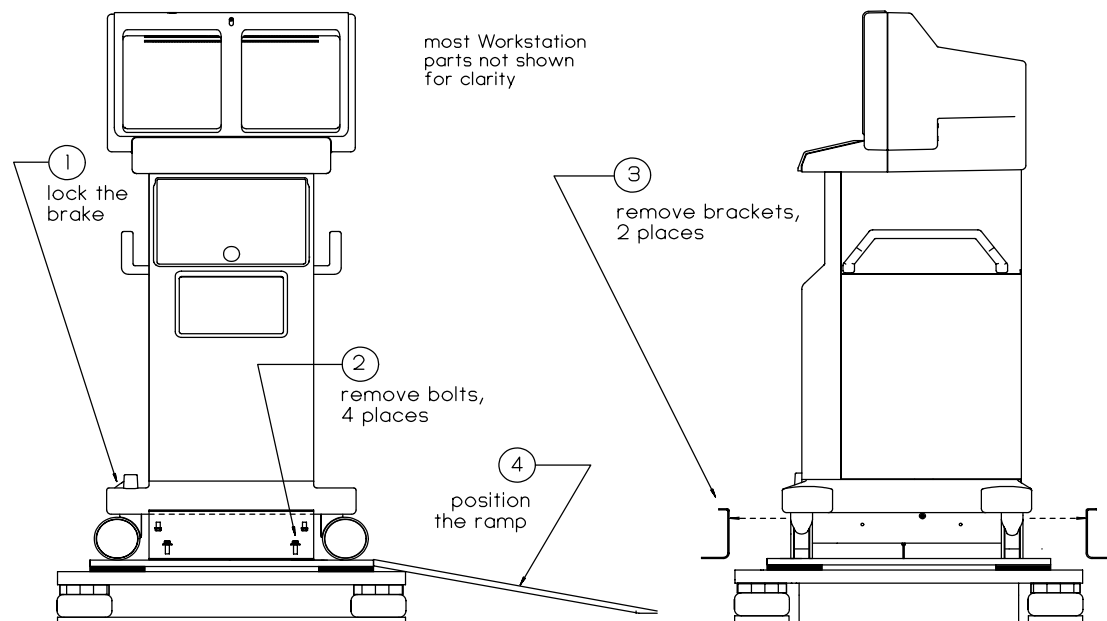
Note: *To depallet the generator, you must first mount the tower/table to the floor, then use the subassembly lifting device (see Mounting Tower/table and Generator, later in this Procedure.*

Workstation Depalleting

Remove protective shipping material (see Uncrating above). The following step numbers correspond to the callouts on the illustrations shown on the next pages.

1. Push down on the Workstation brake pedal and lock the brake (if not already locked) so the Workstation will not roll. (The brake pedal is located on the Workstation side near the bottom.)
2. Locate the two metal brackets that attach the Workstation to the pallet, and remove all four bolts and their washers from the metal brackets. (The brackets are located at the front and rear of the Workstation, below the Workstation bottom frame.)
3. Remove the two metal brackets from the Workstation pallet. Discard brackets and bolts.
4. Place the Workstation ramp on the Workstation pallet on the side opposite the brake pedal.
5. Release the Workstation brake by placing the brake pedal in the neutral (flat) position.
6. Grasp the Workstation side handles, roll the Workstation off the pallet, and remove the shrink wrap around the handles and cables.
7. Remove the tie wraps securing the interconnect and power cables, then remove any additional packing material.
8. Remove the workstation from the pallet. Discard pallet.

Uroview 2800 Installation Procedure



Workstation Depalleting

Tower/Table Depalleting

Open lifting device shipping crate. Remove the tower lifting device parts, consisting of (see the following illustration):

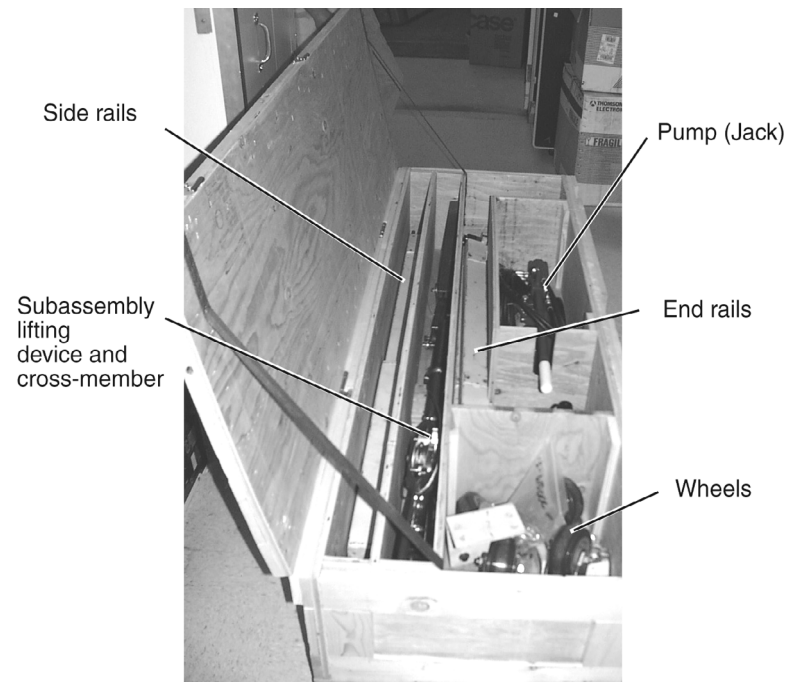
- Two side rails bolt to the tower base
- Two end rails with attaching hydraulic rams fit onto the side rail ends with retaining pins
- One cross-member which bolts across the side rails below the table, using cap screws
- Pump (jack) and connecting hydraulic hoses equipped with quick-disconnects
- Four wheels, 2 with brakes, 2 without brakes
- Wood blocks for safety support

Uroview 2800 Installation Procedure

- One subassembly lifting device

CAUTION: *If you should need to move a fully assembled tower/table using this lifting device, be careful of tipping it over. The center of gravity will be shifted if you have assembled the X-ray arm. Be careful when pushing the machine sideways. Turn corners more carefully than normal.*

Note: *Bolts, cap screws, and retaining pins are provided in the installation kit.*

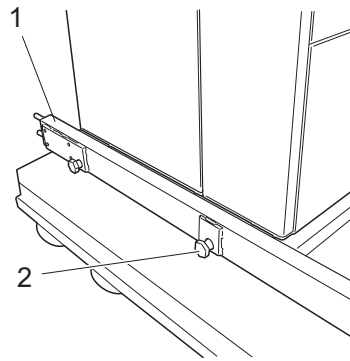


Lifting Device Shipping Container

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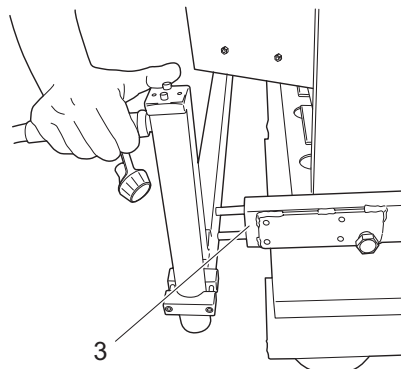
To remove the tower/table from the pallet, follow these steps (the step number corresponds to the callout on the illustrations below).

1. Place side rails against tower, each side.
2. Bolt side rails to tower. Note reinforcement of hole faces outward.

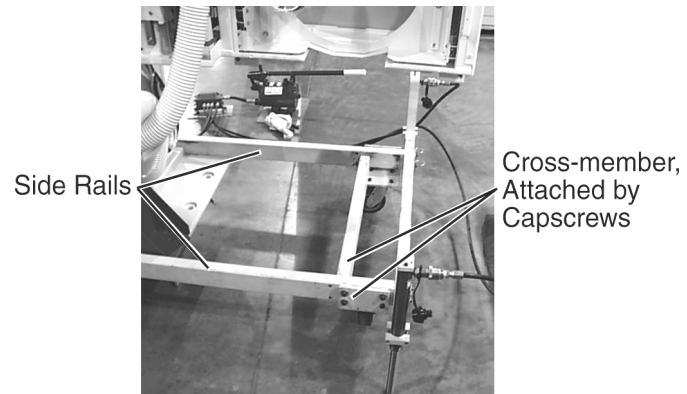


Attaching Side Rails

3. Fit end rails and cross-member to side rails.

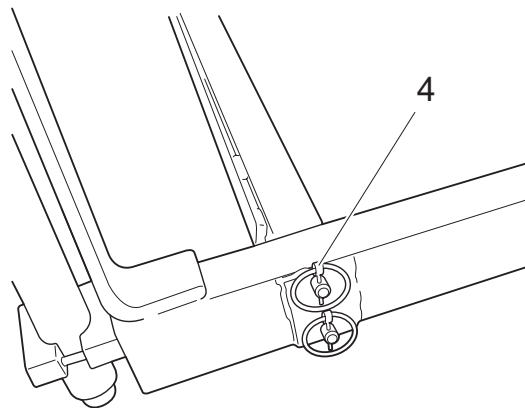


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Side Rails, Cross-member

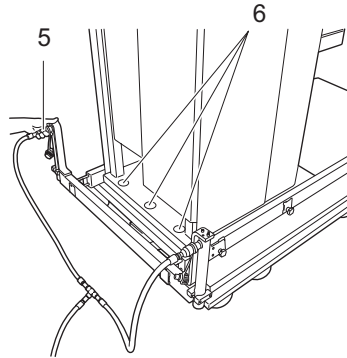
4. At each corner, install retaining pins (2 each location).



Install Retaining Pins

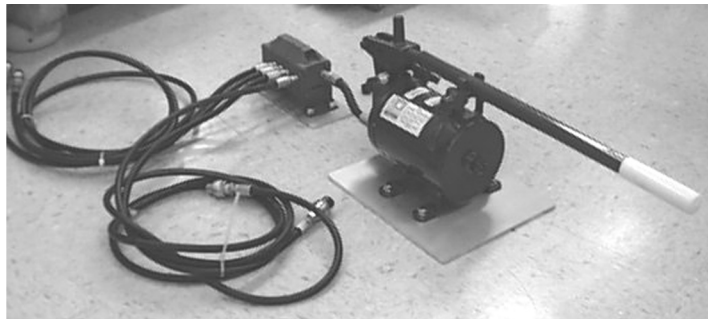
Uroview 2800 Installation Procedure

5. Connect hydraulic lines to each ram (quick-disconnect fittings are already installed).
6. Remove all bolts securing pallet to tower.



Connecting the Hydraulic Lines

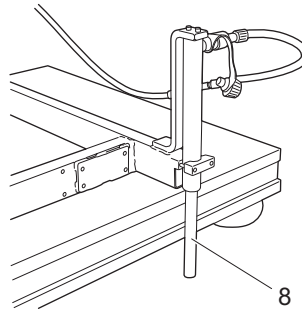
7. Connect pump (jack).



Pump (Jack)

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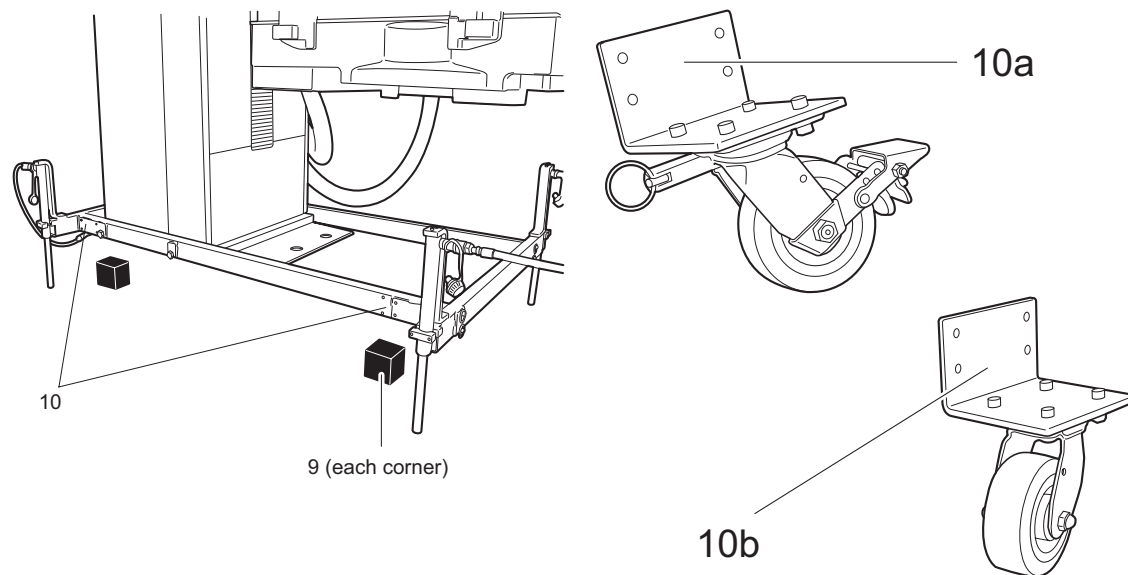
8. Lift the unit. If all four rams do not extend and lift equally, fully lower the unit and begin lifting again using longer, more rapid pump strokes.



Extended Hydraulic Ram

9. Slide pallet out from under the unit. Insert wood blocks at each corner as a safety support measure.

Uroview 2800 Installation Procedure



Installing wheels

10. Install wheels. Wheel (10a) is equipped with a brake. Install both (10a) brakes on the tower end, both (10b) brakes on the table end.

Warning: *Remove steering lock pins on wheels only for close maneuvering.*

11. Slowly lower onto the wheels.
12. Disconnect pump and lines, or use one of the ramps as a platform across the side rails under the table to carry the pump and hoses along.
13. (Optional for narrow doorways) Remove end rails (see step 3 above).

NOTE: *All items of the lifting device must be returned to GE OEC.*

Mounting to Floor

This section provides instructions for customer approval of system components, floor preparation, and mounting.

Approval to Install

Arrange the tower/table, workstation and generator in the operating room according to the Site Plan Drawing without permanently fixing them in place. Leave the tower/table suspended by its lifting device. Remove any remaining pallets or other visible packing material and dispose of them.

Contact all concerned hospital staff and give them an opportunity to see the arrangement of the system in the operating room. Make any necessary adjustments. The Site Plan Drawing should reflect any new dimensions and be signed by both a GE OEC and a hospital representative.

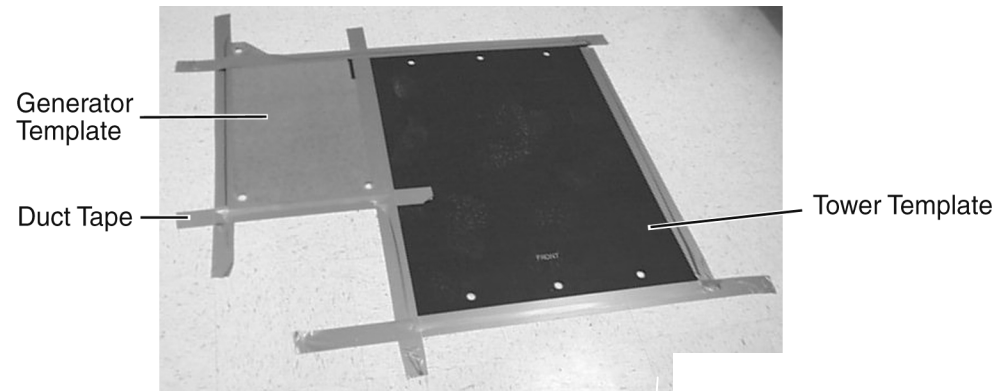
Drill Mounting Holes

1. Measure the distance from all directions for the location of the tower and generator per the final signed-off Site Plan Drawing.

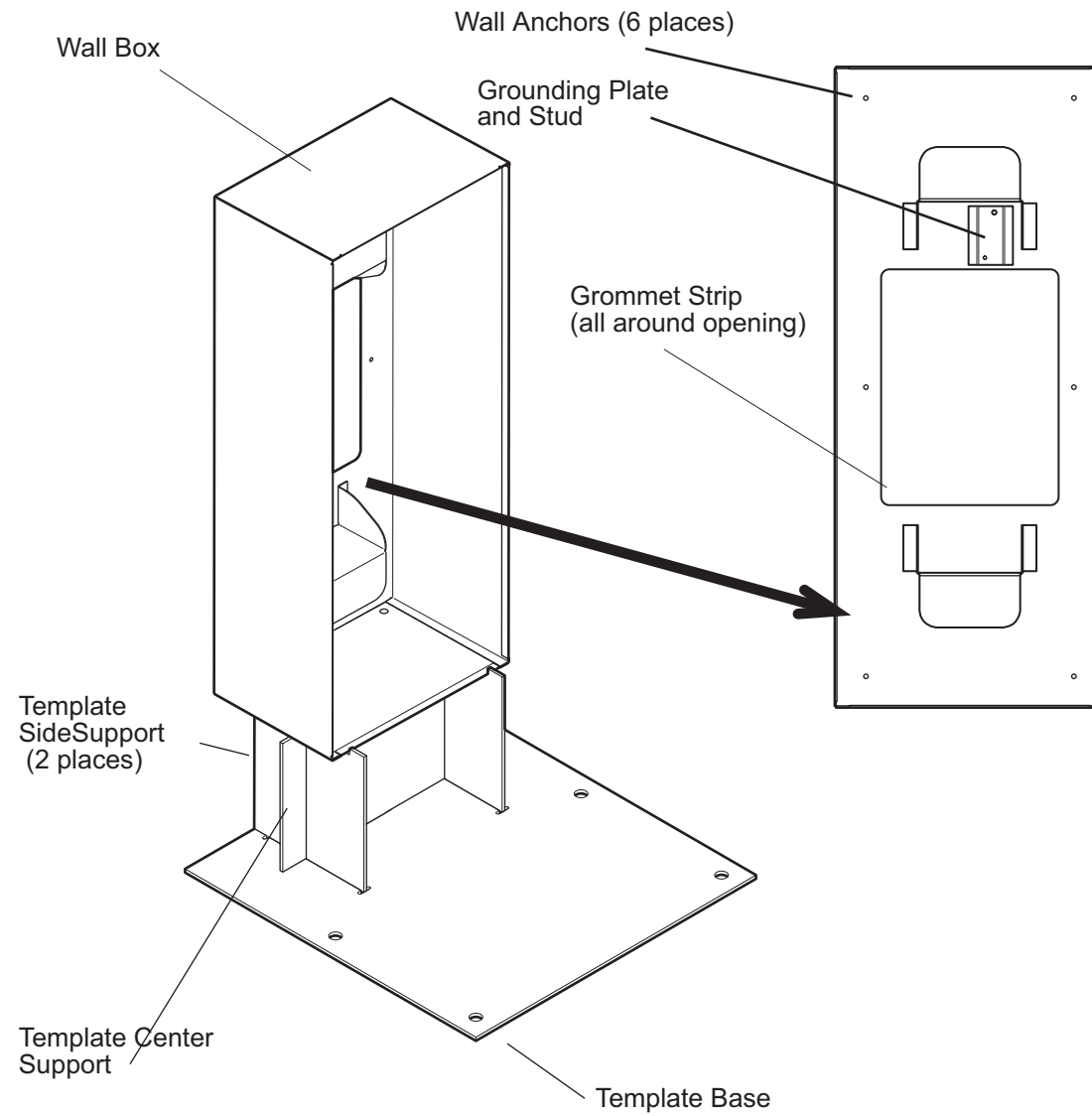
NOTE: The tower base plate is not symmetrical. Be sure you have it properly oriented.

2. Center, position and tape the templates in place at the measured distances (see following figures).
3. Use wall anchors provided in installation kit to mount wall box (if applicable) to wall.
4. Prepare hammer drill with a 27/32-inch bit and set depth stop for a hole 3-1/8 inches deep, including the thickness of the template material.
5. Put on safety glasses.
6. Center-punch each hole.

Uroview 2800 Installation Procedure



Close-Mounted Generator Hole Drilling Template



Remote-Mounted Generator Hole Drilling Templates

Uroview 2800 Installation Procedure

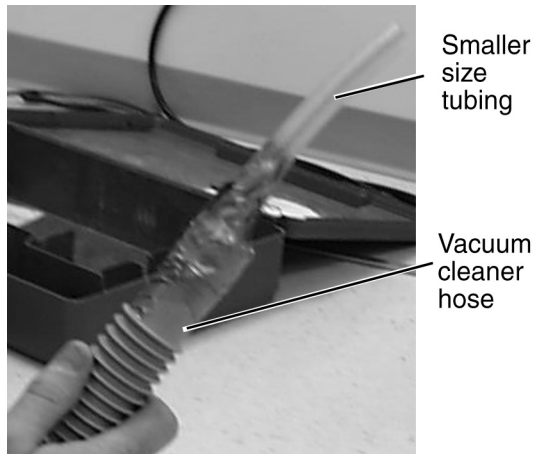
7. Drill six tower and generator anchoring holes as follows:
 - A. As you drill, have the FSE sight from front and side to assure the drill is perpendicular in all directions.
 - B. Maintain a clear vision of the drilling area by having the FSE vacuum as you drill (some sites do not allow vacuums in OR). If you run into rebar in the floor, use a diamond drill bit to drill through it.

Note: If you strike rebar, check with the facility manager. Some rebar may be under load. Cutting it could cause structural damage.

- C. Do not ream the hole or allow the drill to wobble.

Uroview 2800 Installation Procedure

8. Clean each hole by smoothing the sides and floor surface with a screwdriver blade. Vacuum each hole thoroughly, using a smaller tube taped to the vacuum cleaner hose (see the following figures).



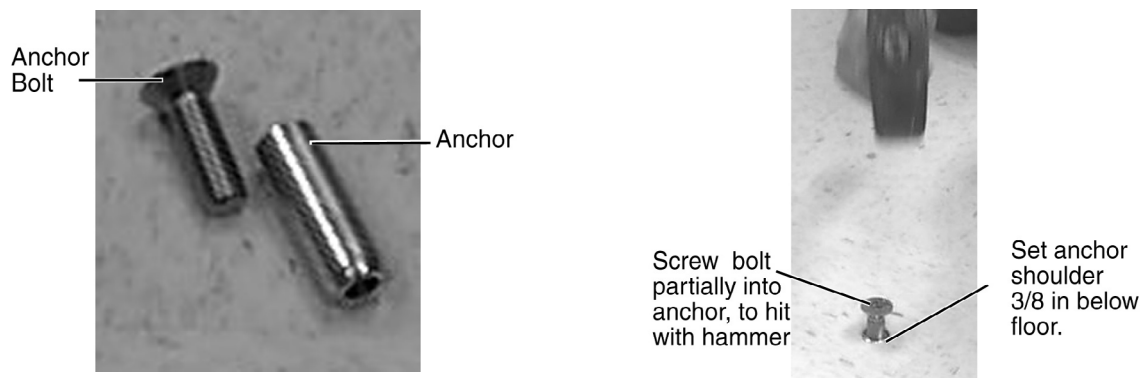
Adapt Vacuum Cleaner Hose



Vacuum Each Hole

Install Anchors

1. Screw an anchor bolt partially into an anchor. Using a small sledge-hammer, pound the anchor into a hole until the edges of the anchor are $\frac{3}{8}$ - $\frac{1}{2}$ inch below the level of the floor covering. Remove the bolt from the anchor and repeat for the remaining anchors.



Installing Anchor

2. Insert the setting tool into the anchor, and expand the anchor by striking the end of the setting tool with a hammer. The anchor is set (fully expanded) when the shoulder of the setting tool touches the anchor. Full expansion is necessary for proper anchor performance.

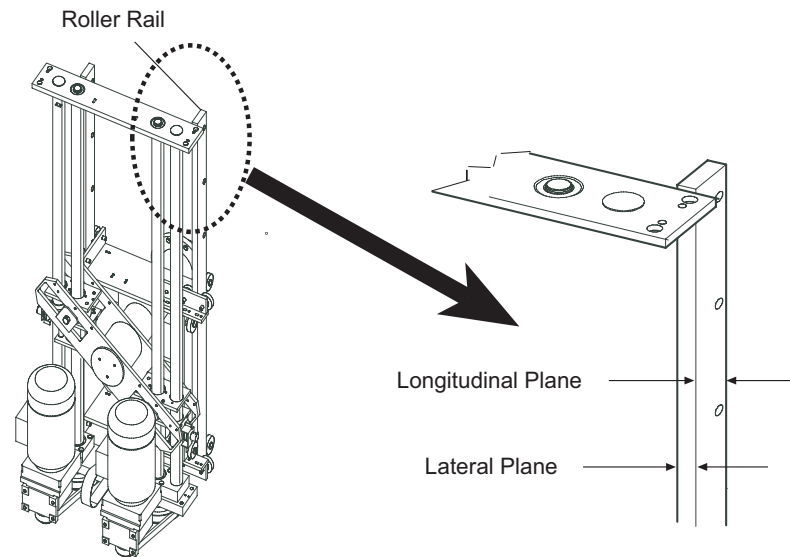


Anchor Setting Tool

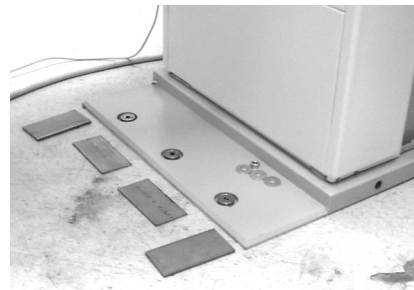
3. If the floor is not thick enough, have the FSE assist in bolting the system with approved hardware.
4. (California installations) Have the anchor pull test performed by the proper facility representative.

Tower/table

1. Clean dust and debris from the installed anchors and floor. Wipe the floor with a damp towel to remove any remaining dust.
2. Run a bead of silicone around anchor holes and just inside the underside of the base plates. This will help you move the table during installation as well as seal the base plate later.
3. Position the tower base above the anchor holes.
4. Lift tower/table off the wheels, and remove wheels.
5. Lower tower/table to floor.
6. Verify that tower/table is level. If not level, insert shims provided in installation kit as required.



Leveling the Tower

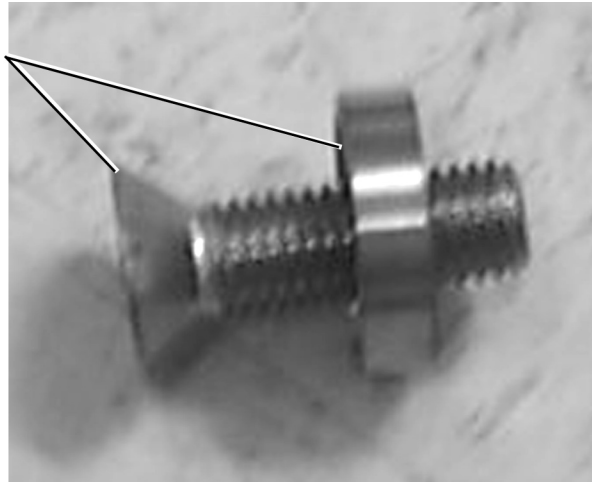


Shimming the Tower

Uroview 2800 Installation Procedure

7. Secure the tower with anchor bolts and tapered washers. Tighten the bolts until snug.

Bolt fits into tapered hole in washer.



Anchor Bolt With Tapered Washer Installed

8. Detach the lifting device.

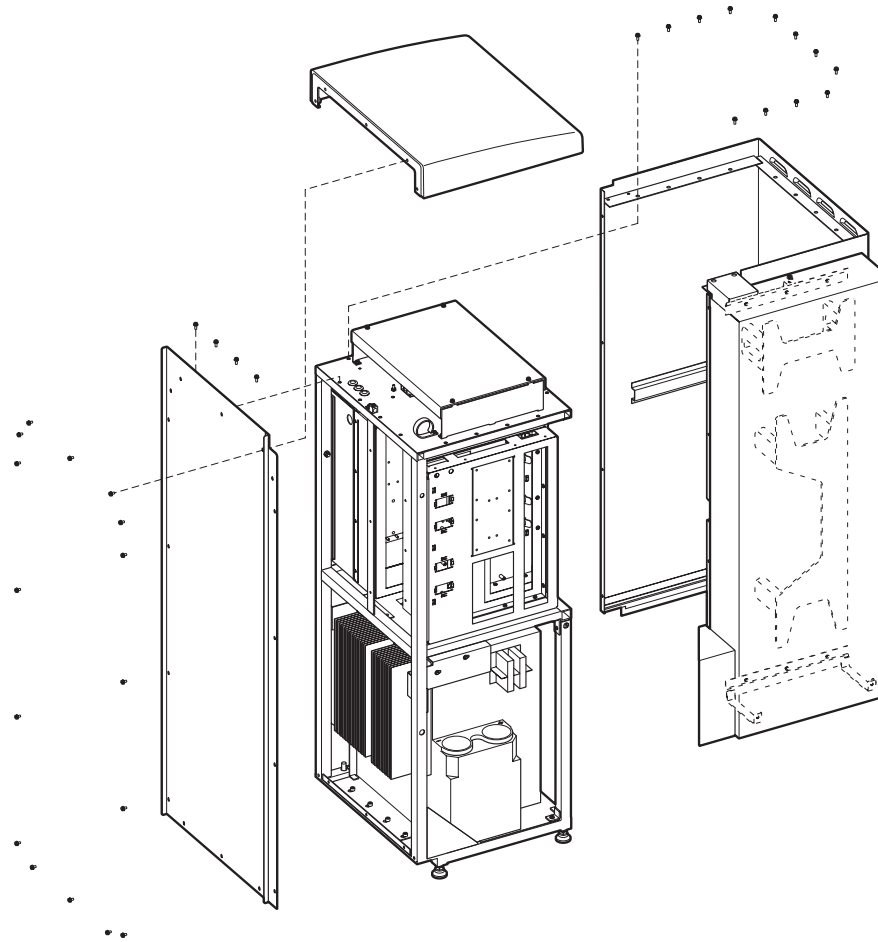
Mounting the Generator

Mounting the generator consists of depalleting it, and anchoring it to the floor.

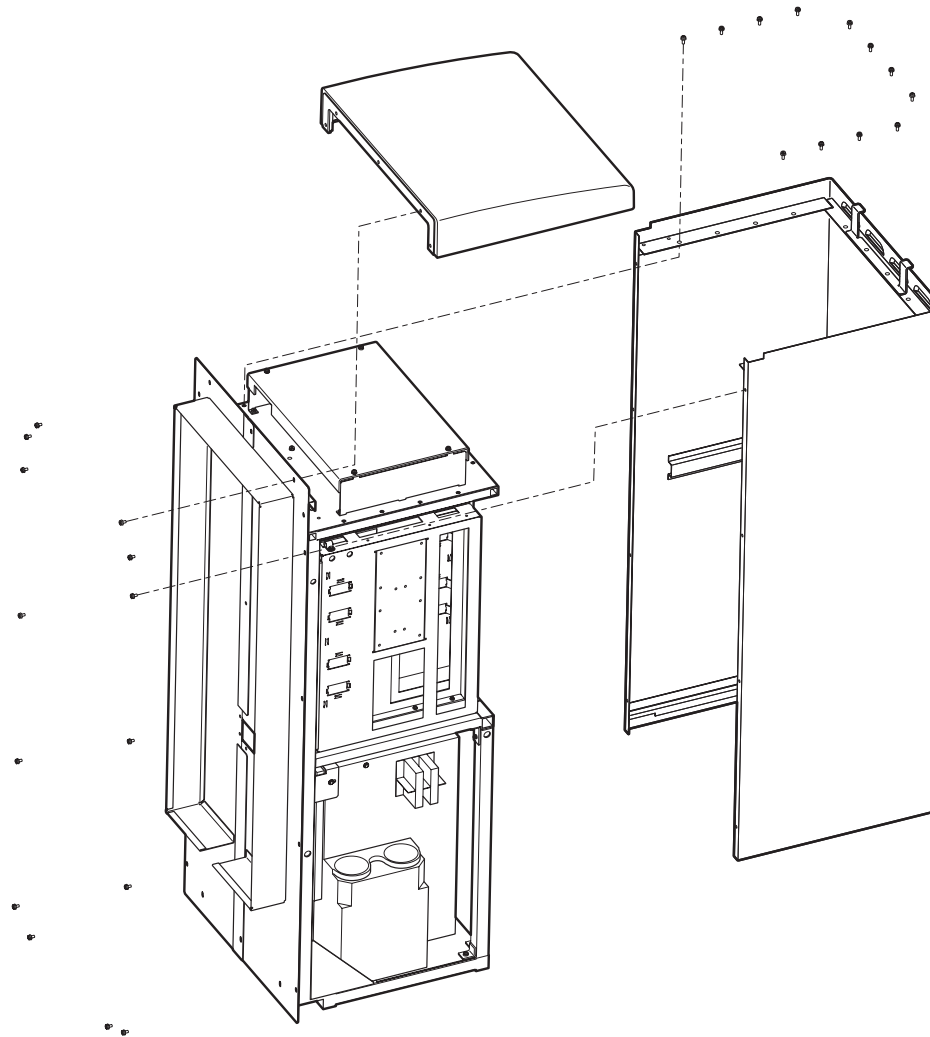
Depalleting the Generator

Warning: *Environmental Health and Safety regulations do not permit lifting the generator by human force only. You must use the lifting device provided.*

1. If not already done, remove all packing materials (see *Unpacking*, above).
2. Remove covers (see following figures).



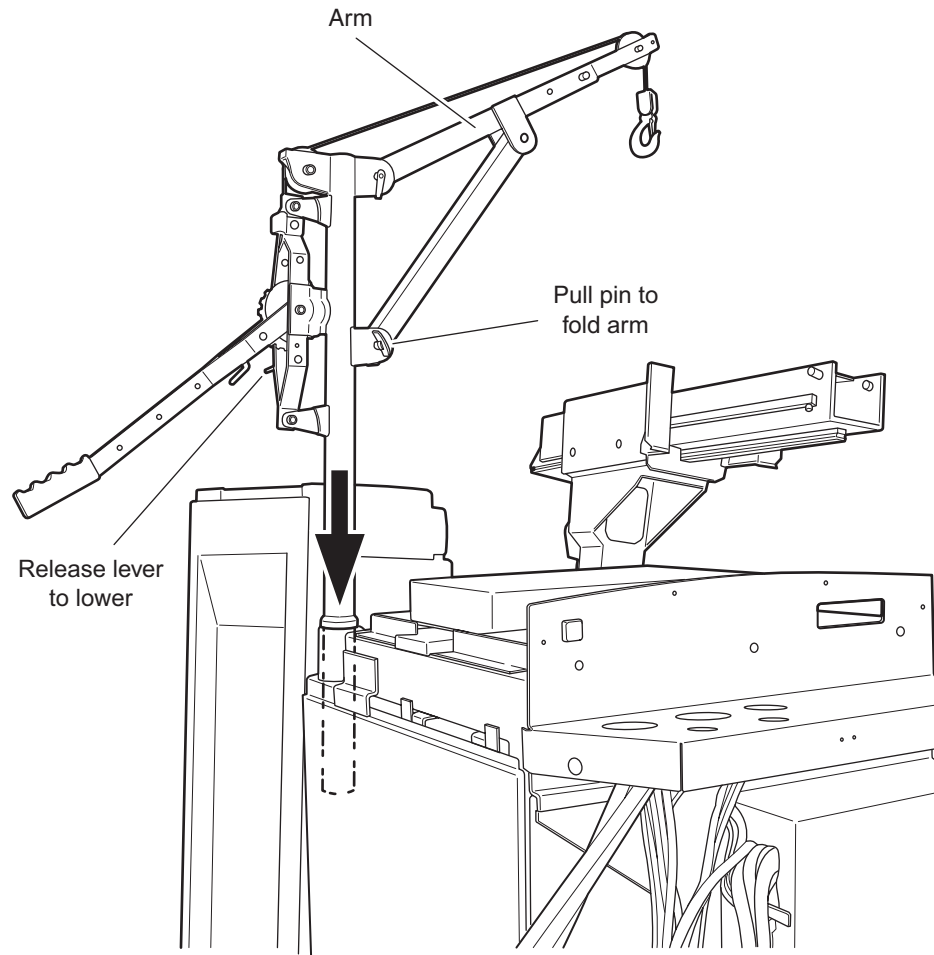
Generator Cover Removal



Generator Covers Removal (Remote Mtd)

Uroview 2800 Installation Procedure

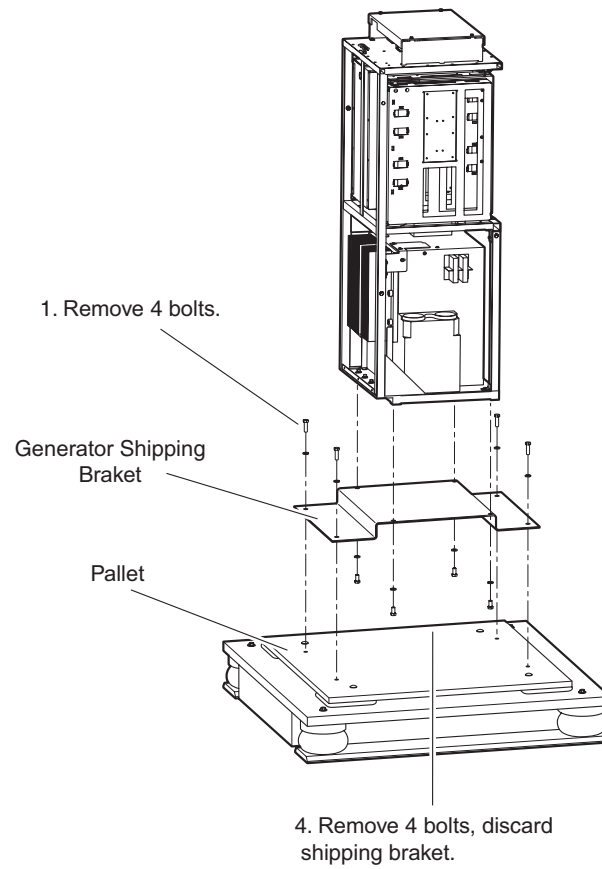
3. Obtain subassembly lifting device (see *Tower/Table Depalleting*, earlier in this Procedure). Place lifting device in tower corner pipe.



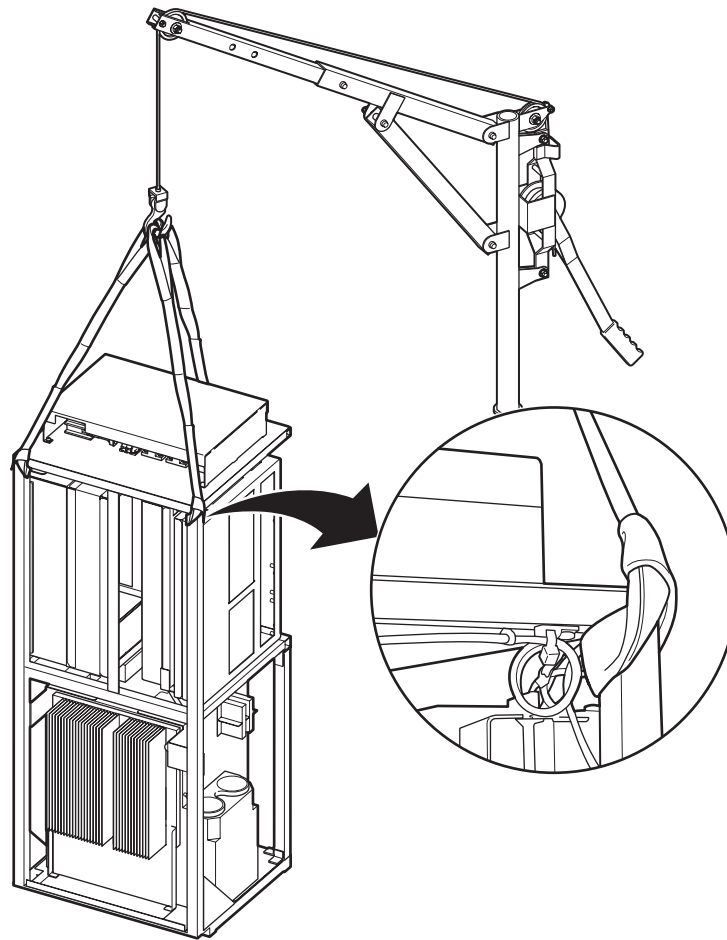
Lifting Device Installed on Tower

Uroview 2800 Installation Procedure

4. Position generator pallet below lifting device.
5. Using choker straps, connect generator to lifting device, and lift generator off pallet.
6. Remove pallet-to-shipping-bracket bolts (see illustration below).
7. Remove generator-to-shipping bracket bolts, remove shipping bracket, and discard. Also discard pallet.
8. Install generator feet provided in installation kit.
9. Lower generator and remove chokers.



Generator Depalleting Details



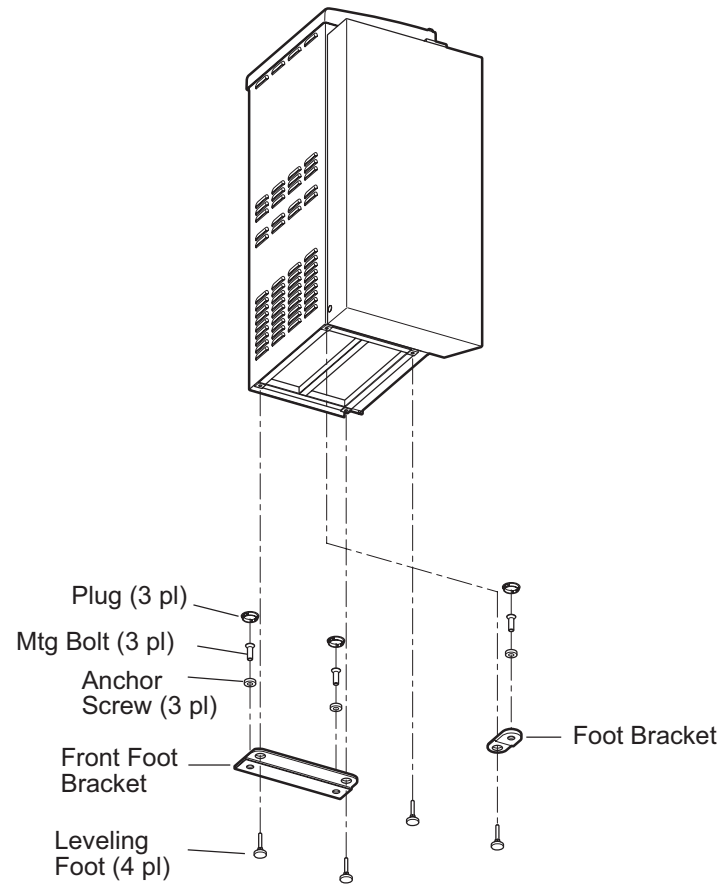
Lifting the Generator

Anchoring the Generator

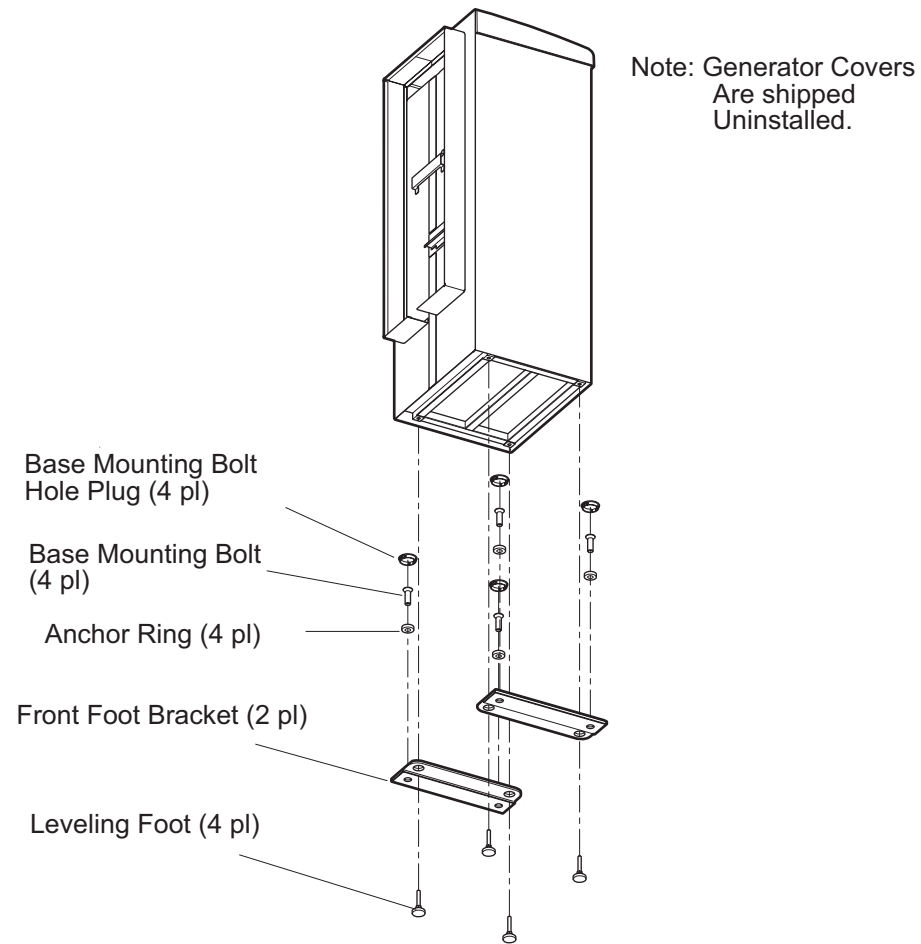
After you have obtained permission to install, as described above, mount generator to floor as follows:

1. Temporarily position generator near mounting holes, near enough that you can work around it. Finish the steps below after the system is up and all functions verified.
2. Install generator mounting plates on the three generator feet that correspond to the mounting holes in the floor.
3. Clean dust and debris from the installed anchors and floor. Wipe the floor with a damp towel to remove any remaining dust.
4. Position the generator such that the holes in the mounting plates are over the anchor holes.
5. Verify that the generator is level. If not level, adjust feet until level.
6. Secure the generator mounting plates with the anchor bolts and tapered washers. Tighten the bolts until snug.

Note: Generator covers are shipped uninstalled.



Anchoring the Generator



Anchoring the Remote Generator

Internal Inspection

You must now inspect the interiors of the generator, workstation, and tower/table. Check for damage that may have been caused during shipment, such as loose or missing parts and fasteners. Also look closely at all wires and cabling, to be sure all connections are tight.

Note: Observe electrostatic discharge safety procedures.

Generator

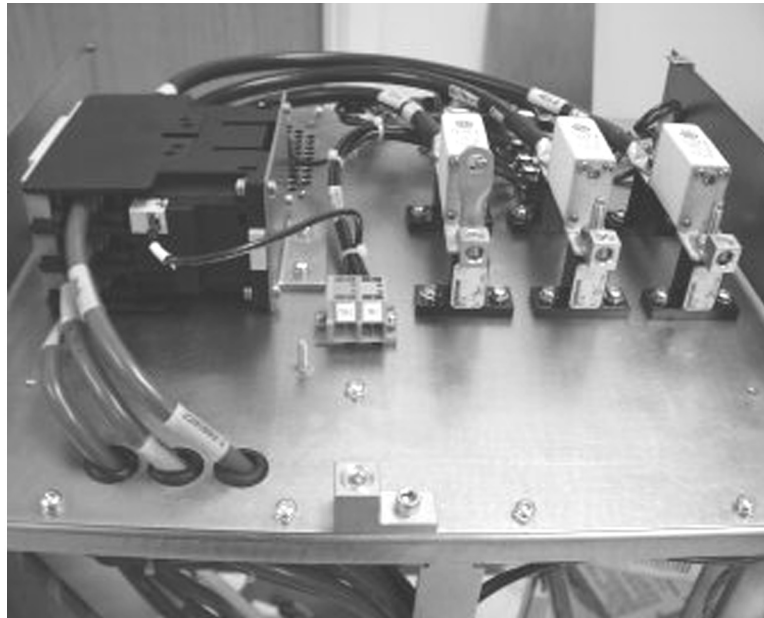
1. Release upper module fasteners, swing modules outward, and check for loose, damaged, or missing parts. Without removing the module covers, check all internal wiring and cables for damage or loose connections.
2. Remove cover from generator power assembly (see following picture). Check for loose, damaged, or missing parts. Check all wiring and cables for damage and loose connections.

Uroview 2800 Installation Procedure



Fastener at
bottom of
each
module

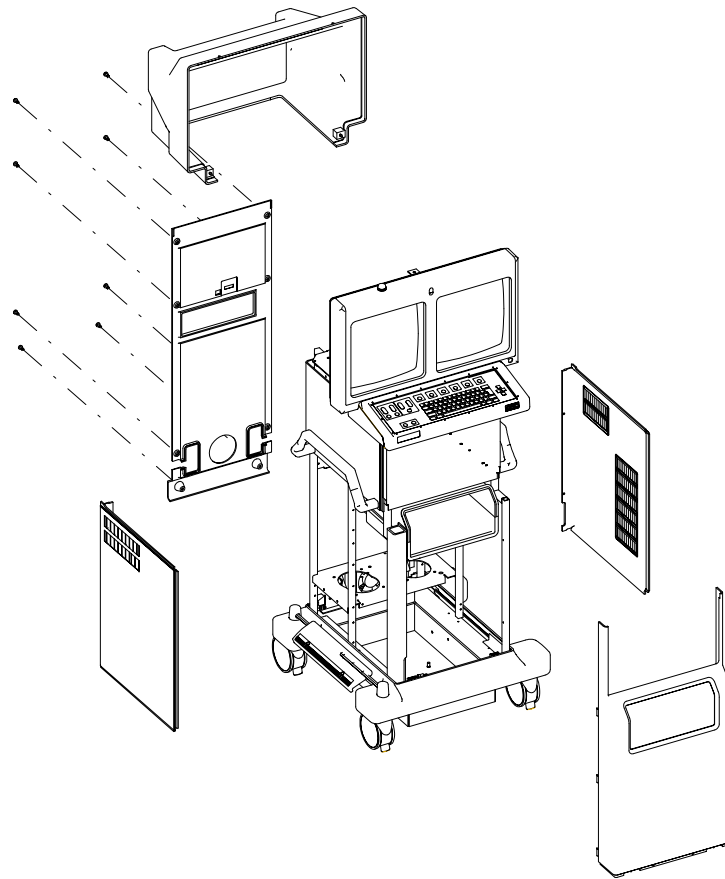
Generator Upper Modules



Generator Power Assembly

Workstation

1. Check the antistatic drag cable on the Workstation.
2. Inspect the interconnect cable, AC power cable and the high voltage cable for wear, abrasion and bent or broken pins.
3. Remove Workstation covers and inspect the internal cables and PCB seating (see following illustrations). Look for loose parts.

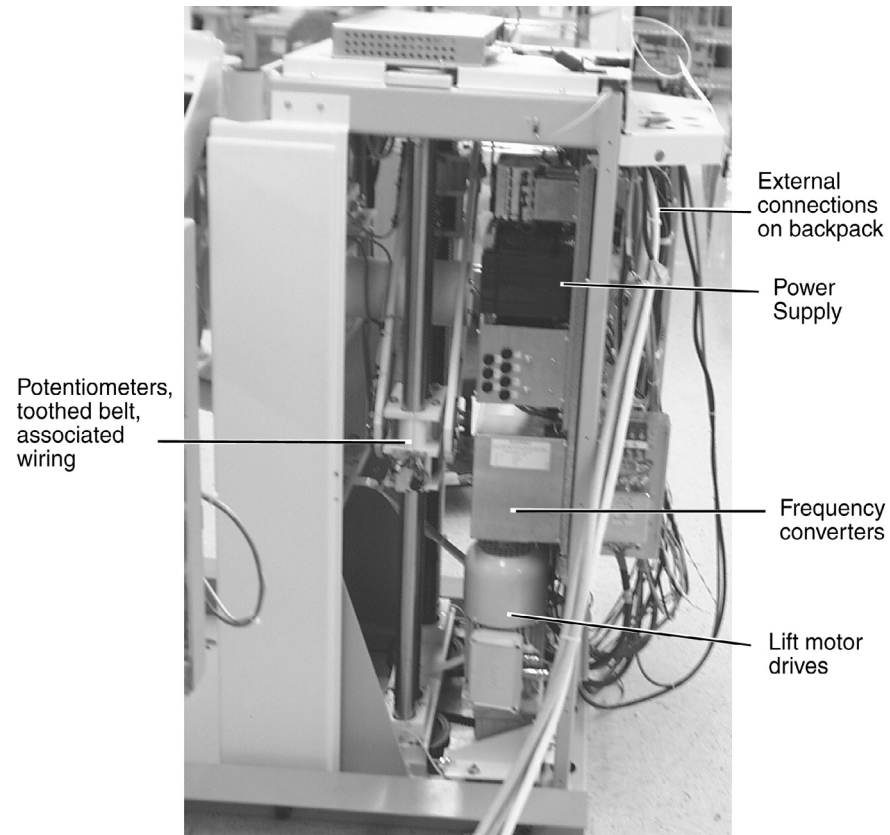


Note: Covers are arranged for illustration purposes

Remove Workstation Covers

Tower/Table

Inspect the following areas of the tower/table for loose fasteners, loose or damaged parts, and loose wires and cables.



Tower Internal Inspection

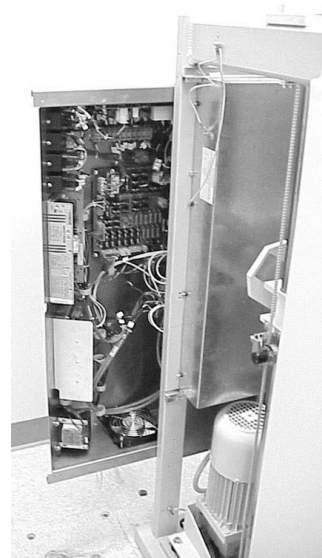
BackPack

Check all connections inside and outside the backpack.

Note: Especially inspect the cable connection on Relay TB4, located inside the upper left corner of the backpack. This cable may have been intentionally unplugged during manufacturing tests.



Backpack Exterior Connections



Backpack Interior Connections

System Cables

This section provides information about installing cables into conduits and connecting the cables for facility power, Tower/Table, Workstation, Generator, and X-ray Control Console.

Cable Pulling

The quantity and size of liquid tight conduit you will use depends on how the generator is to be mounted---locally (attached to the Tower/Table), or remote-mounted (not attached to the Tower/Table).

- Locally mounted generator: two lengths of 2-inch diameter, and one length of 2-1/2-inch diameter.
- Remote mounted generator: two lengths of 2-inch diameter, and one length of 2-1/2-inch diameter.

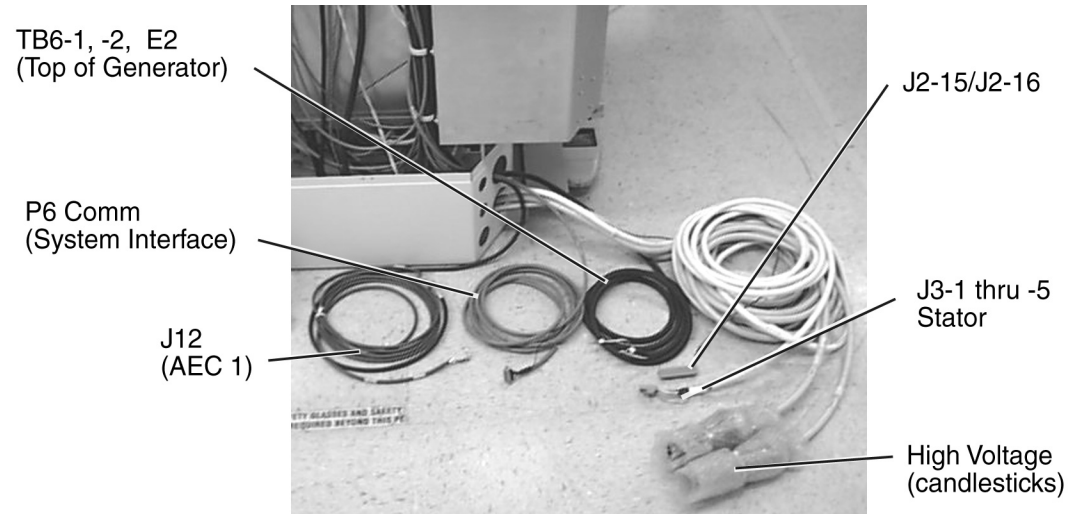
Note: An additional length of 1-inch diameter conduit is also provided in the installation kit, just in case you need more cable space.

The conduit will always connect from the top surface of the tower/table backpack to junction boxes previously installed in the ceiling.

Depending on specific site requirements, the X-ray Control Console and workstation cables may be either direct or routed through conduit. However, you will still use the quantity and size of conduit needed according to the generator location.

1. Using the Site Preparation drawing for this site, verify correct location of customer-installed junction boxes in ceiling and walls, corresponding to the required location of workstation, generator, and X-ray Control Console.
2. From workstation location if applicable, pull Power and LEMO cables through wall and ceiling conduit, and drop to the tower/table.
3. Repeat for the X-ray Control Console P13 cable.
4. Prepare generator cables for pulling through conduit, as follows:
 - A. Arrange the generator cables at bottom of backpack (see the following figure).
 - B. For locally mounted generator, none of these will go into conduit.

- C. For remote mounted generator, re-arrange these cables so they will emerge from the top of the tower/table rear panel.

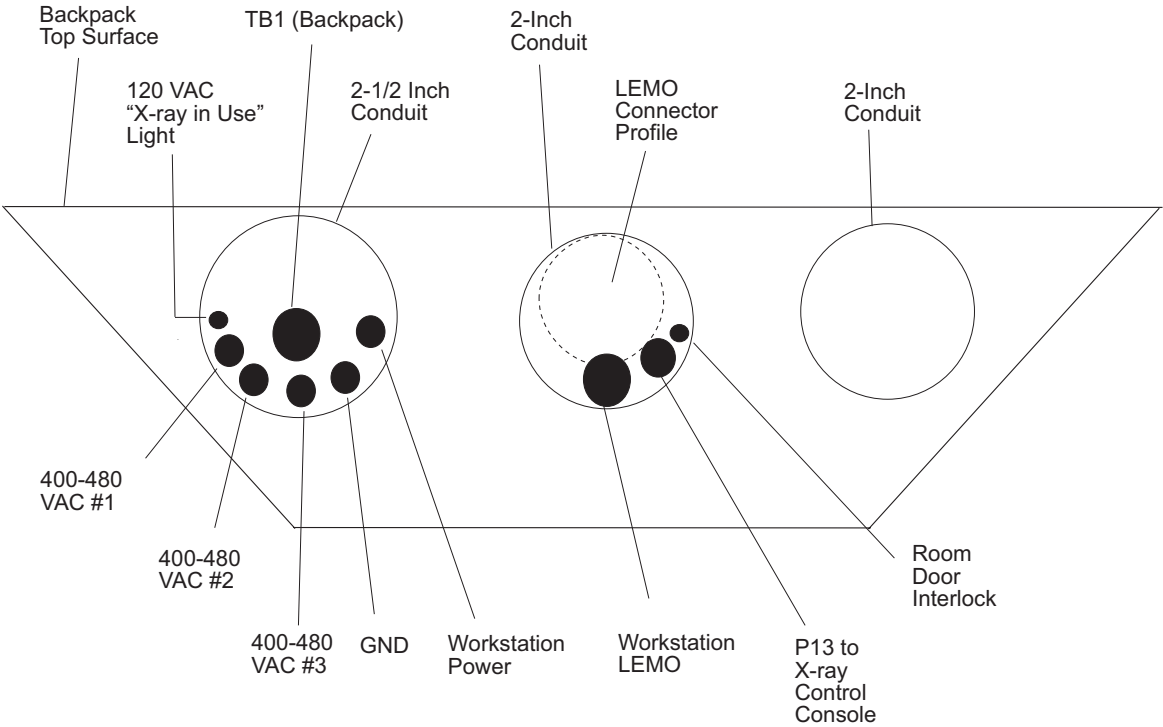


Cables for Locally-Mounted Generator

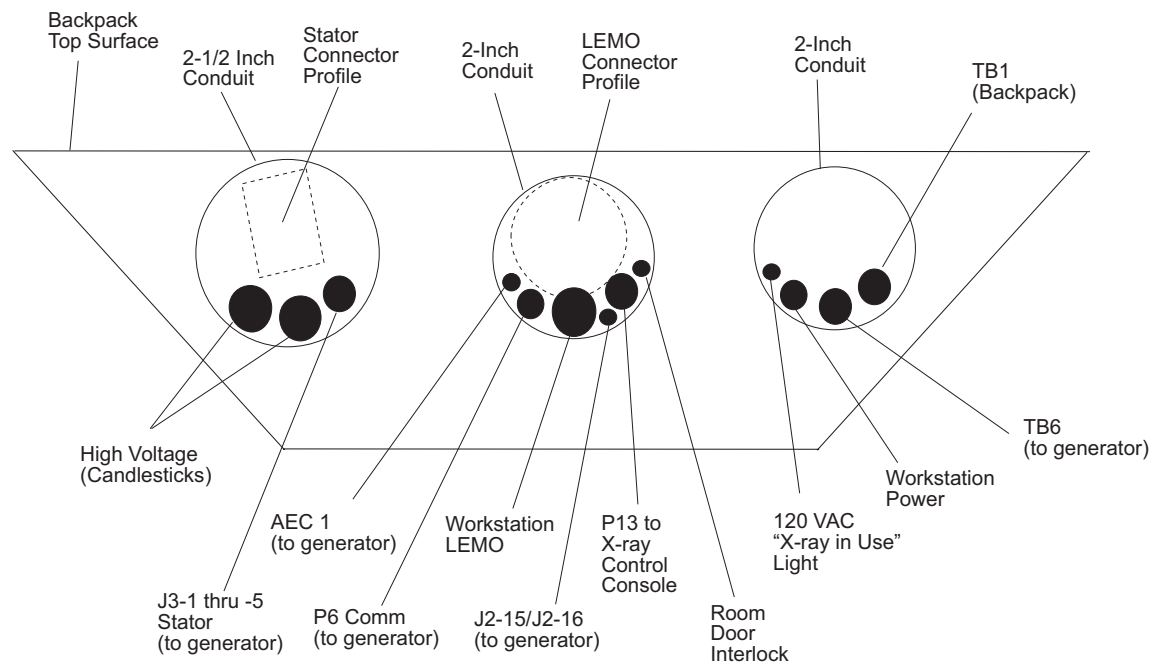
5. Measure and cut liquid-tight conduit to length for spanning from top of tower/table to ceiling, according to the figures following.

Note: Allow for the natural bend of the conduit. You cannot shape it.

6. Pull cables through conduit, according to the figures below.

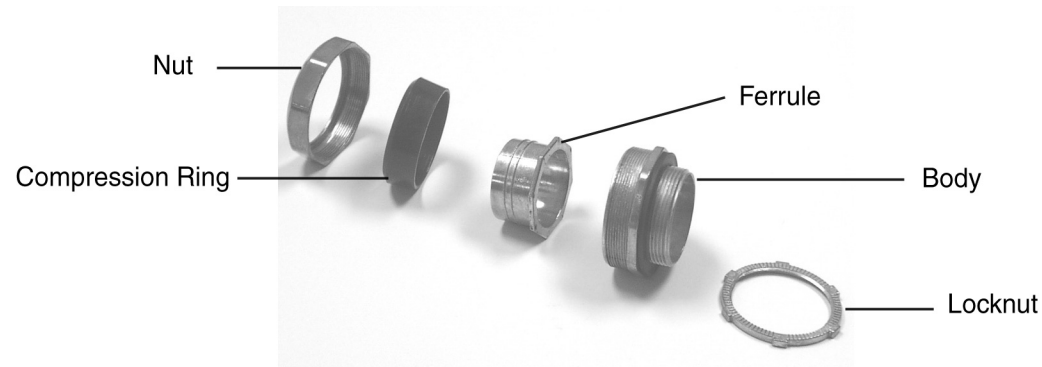


Cable Arrangement for Local Generator



Cable Arrangement for Remote Generator

7. Connect conduit to top of tower/table and junction boxes in ceiling using steel fittings, as follows (see the following photo):
 - A. Slide nut and compression ring over end of conduit. Larger shoulder of compression ring must seat inside nut.
 - B. Insert ferrule inside conduit.
 - C. Screw body into nut.
 - D. Insert body into attaching junction box or equipment box, and secure with locknut.



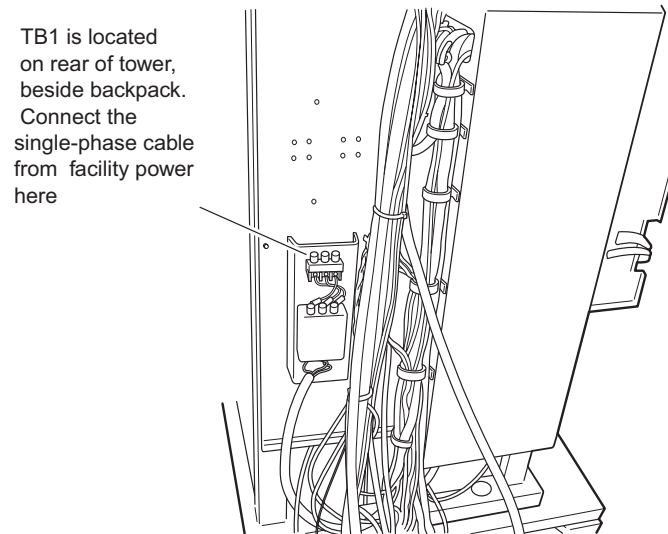
Liquid-Tight Conduit Fitting Installation

System Cable Connection

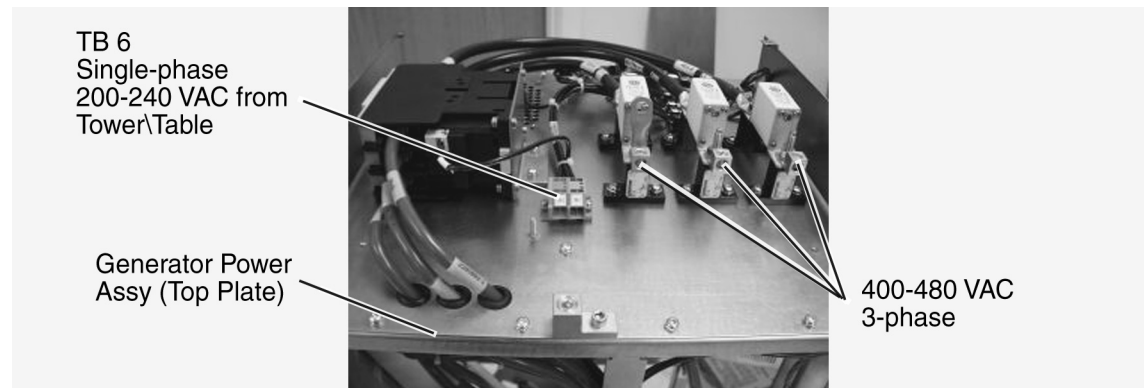
After you have snaked cables into conduits as applicable (see previous section), connect system cables as shown in the following figures

WARNING *Verify that lockout/tag-out is correctly in place at the facility power junction box.*

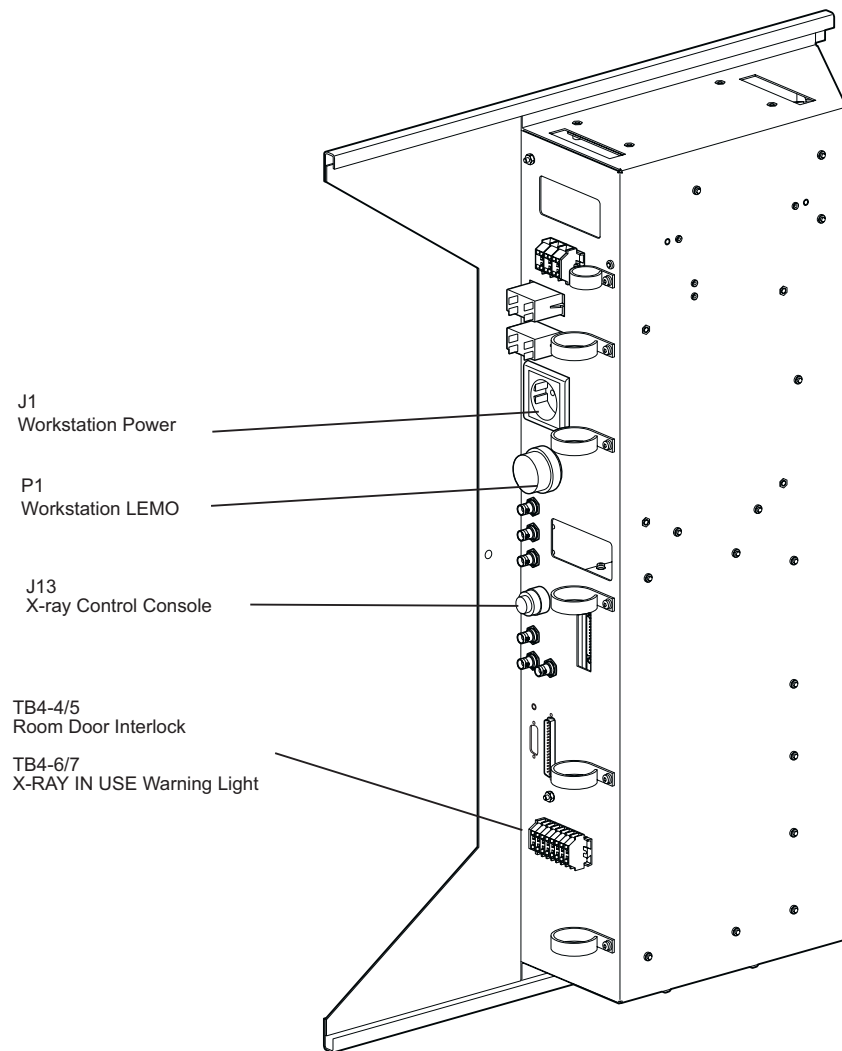
Uroview 2800 Installation Procedure



Facility Power Connection to Tower/Table



Generator Power Assy (Top Plate) Connections



Connections to Exterior of Backpack

Uroview 2800 Installation Procedure

Inside Upper
Left Corner of
Backpack

Relay TB 4

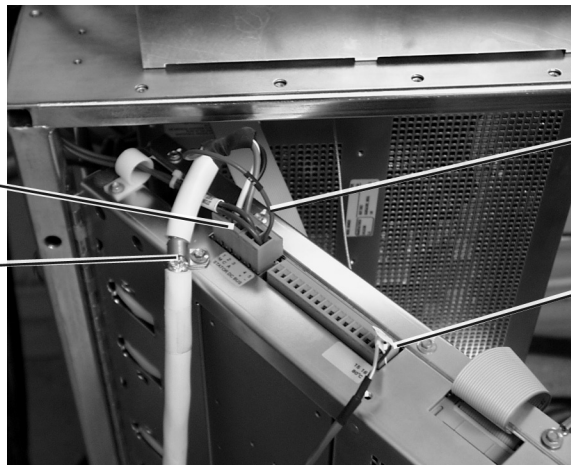


200-240 VAC
Single Phase Cable
to TB-6 on Generator

Connections Inside Backpack

J3-1
through
J3-5

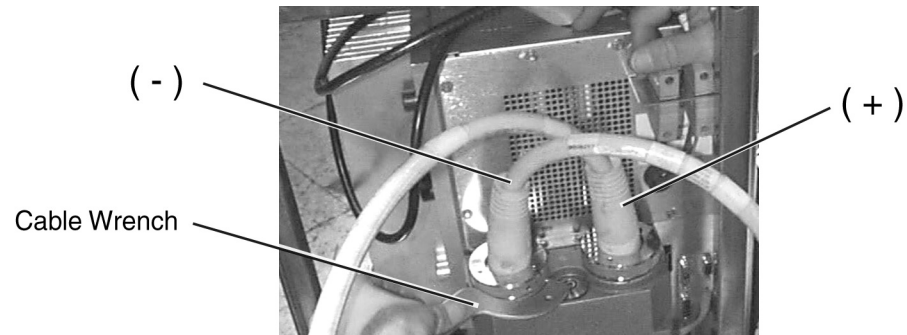
Ground
Stator
Cable to
Chassis



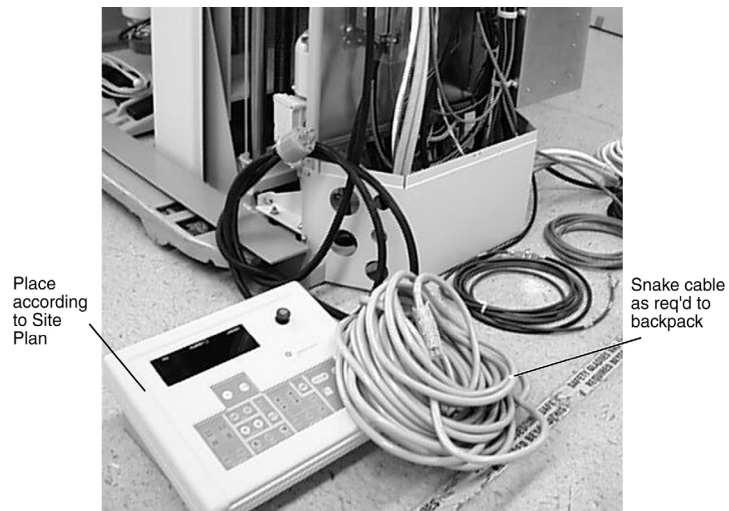
Red Wire
(shield)
to J3-5

J2-15,
J2-16

Generator Stator (J3) and Thermal Switch (J2) Connections

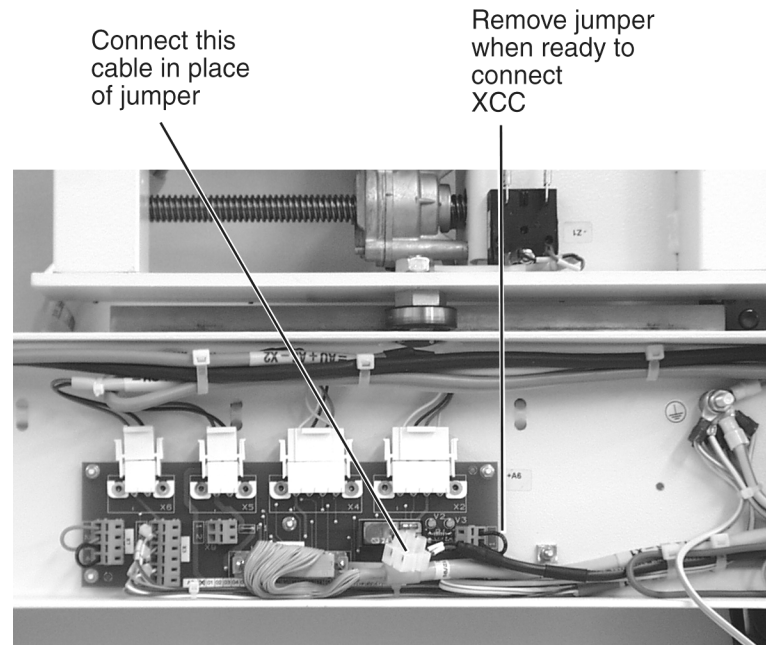


Generator High-Voltage Cable Connections



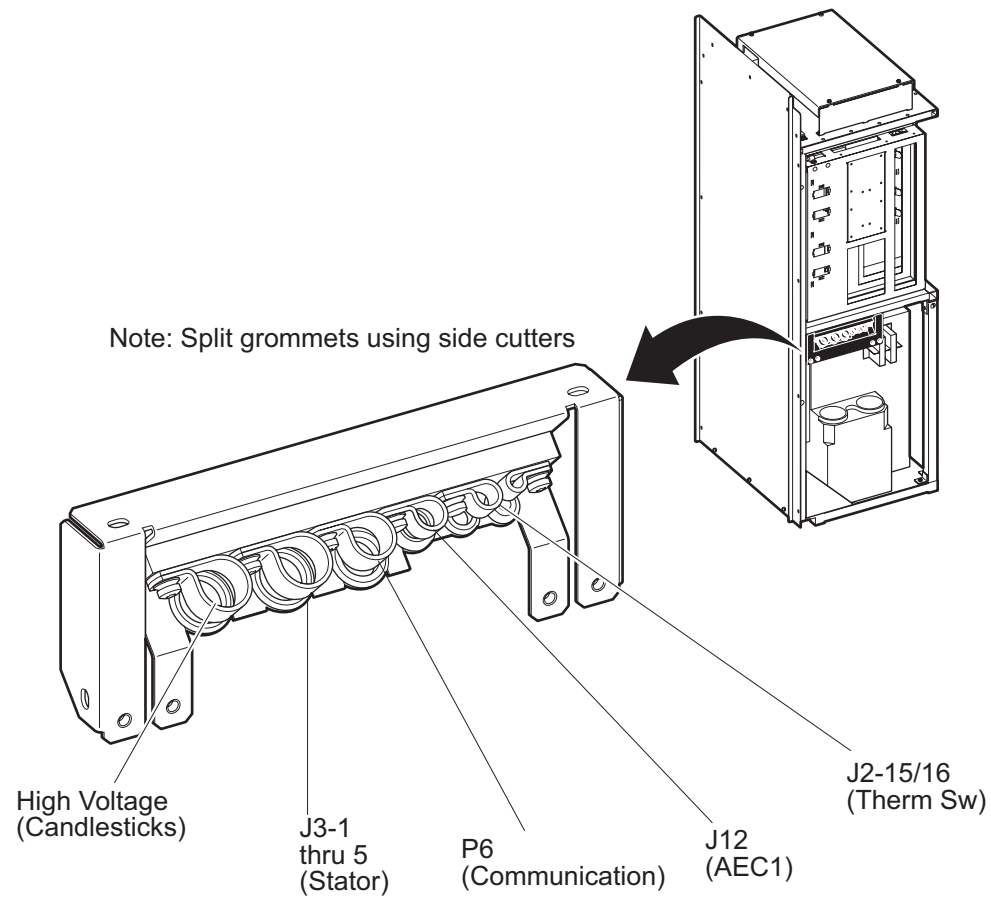
Note: Also see the figure Connecting the Back-pack (rear of Tower/Table), earlier in this section.

X-ray Control Console to J13 on Backpack

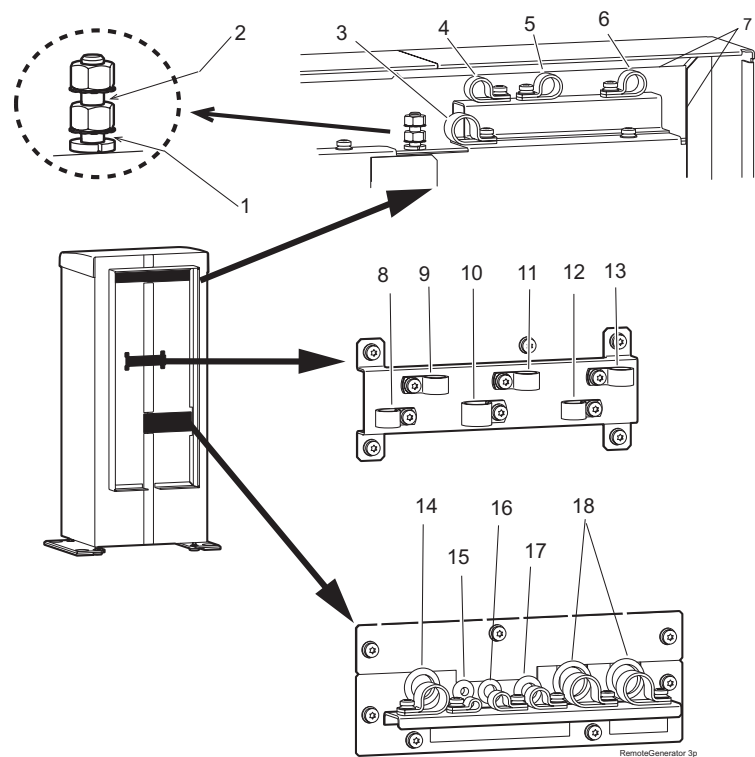


NOTE: This jumper is located on the underside of the table, adjacent to the Table Lateral Drive Assy. The jumper bypasses the X-ray Control Console, allowing table motion without hooking up the XCC.

Jumper bypass to the X-ray Control Console



Generator Rear Panel Cable Clamping (Locally Mounted)



Generator Rear Panel Cable Clamping (Remote Mounted, see following table)

Uroview 2800 Installation Procedure

Item	Instructions	Comments
1	Ground cable to lug inside wall box (see figure in <i>Drill Mounting Holes</i> section).	Cable provided in installation kit, p/n 00-884462-01.
2	Ground from 400-480 VAC facility power	
3	TB6-1/TB6-2/E2 Generator Power Assembly to TB6	7/16 nylon
4	One leg 400-480 VAC facility power	7/16 nylon
5	One leg 400-480 VAC facility power	7/16 nylon
6	One leg 400-480 VAC facility power	7/16 nylon
7	Grommet strip	Provided in installation kit
8	Cable of item 1.	7/16 nylon
9	Cable of item 2	7/16 nylon
10	Cable of item 3	9/16 nylon
11	Cable of item 4	7/16 nylon
12	Cable of item 5	7/16 nylon
13	Cable of item 6	7/16 nylon
14	J3-1 thru -5 (Stator)	9/16 nylon with grommet
15	J2-15/J2-16 (Thermal Sw)	3/16 nylon, with grommet
16	J12 (AEC 1)	5/16 nylon, with grommet
17	P6 Communication (System Interface)	3/8 nylon, with grommet
18	High Voltage (Candlesticks)	5/8 nylon, with grommet

Note: For items 14 through 18, use side cutters to split grommets.

Optional Video Connections

If the system is equipped with optional video input or output devices, you will need to connect them to the Video Standards Converter (VSC). The following options may be used:

- Dual S-Video Input (for example, Storz video)
- Dual S-Video Output, providing two additional outputs of SXGA for additional Flat Panel Display
- Computer Video Input, for displaying video from a peripheral computer (for example, a laptop).

These options require that the applicable card be installed on the VSC motherboard. It should have been installed at the factory, but if not, refer to the Replacement section in the Service Manual for assistance.

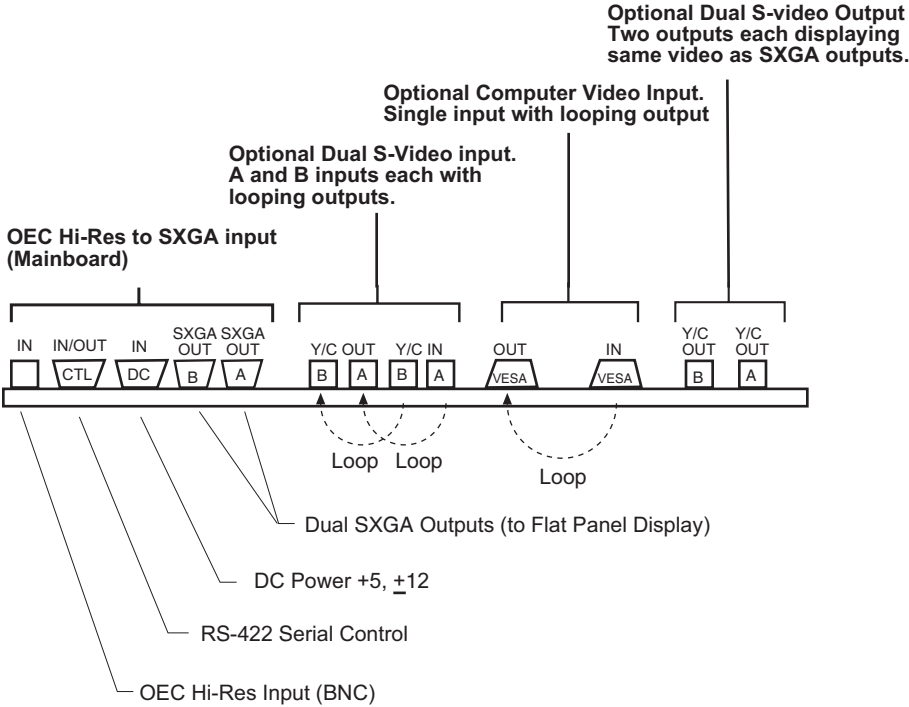
1. Locate the VSC, on top of the tower (see next figure---the connectors for a Dual S-Video Input card is shown).

Note: Any of the optional video cards may be mounted in any of the three optional card bays.



Location of Video Standards Converter

2. Connect the video cable from the optional video device to the corresponding connector on the VSC input/output panel, as shown in the following diagram:



Video Standards Converter Connectors

Transformer Strapping

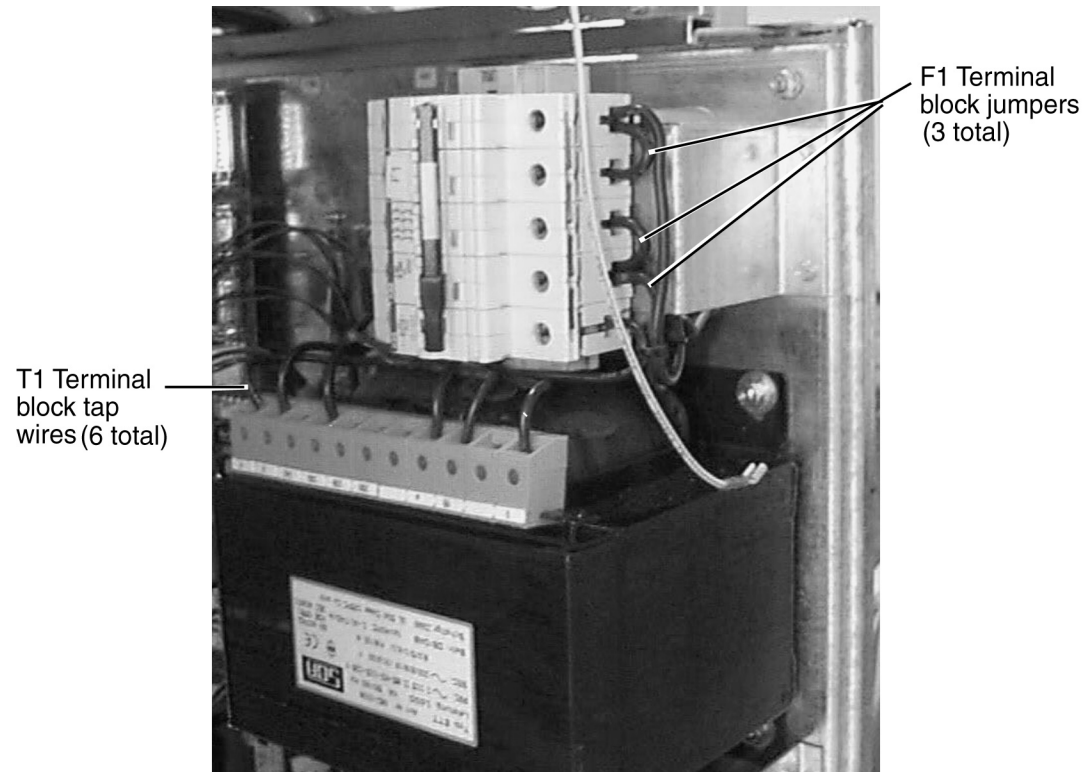
There are three transformers that require jumpers on the primaries of the power transformers. In order to match the nominal facility voltage it is very important that you verify this before you turn on any power, to avoid blowing fuses, or worse. In addition, the generator main contactor coil must be matched to facility voltage.

It is recommended that you check and install the transformer jumpers in the order of the subsections below.

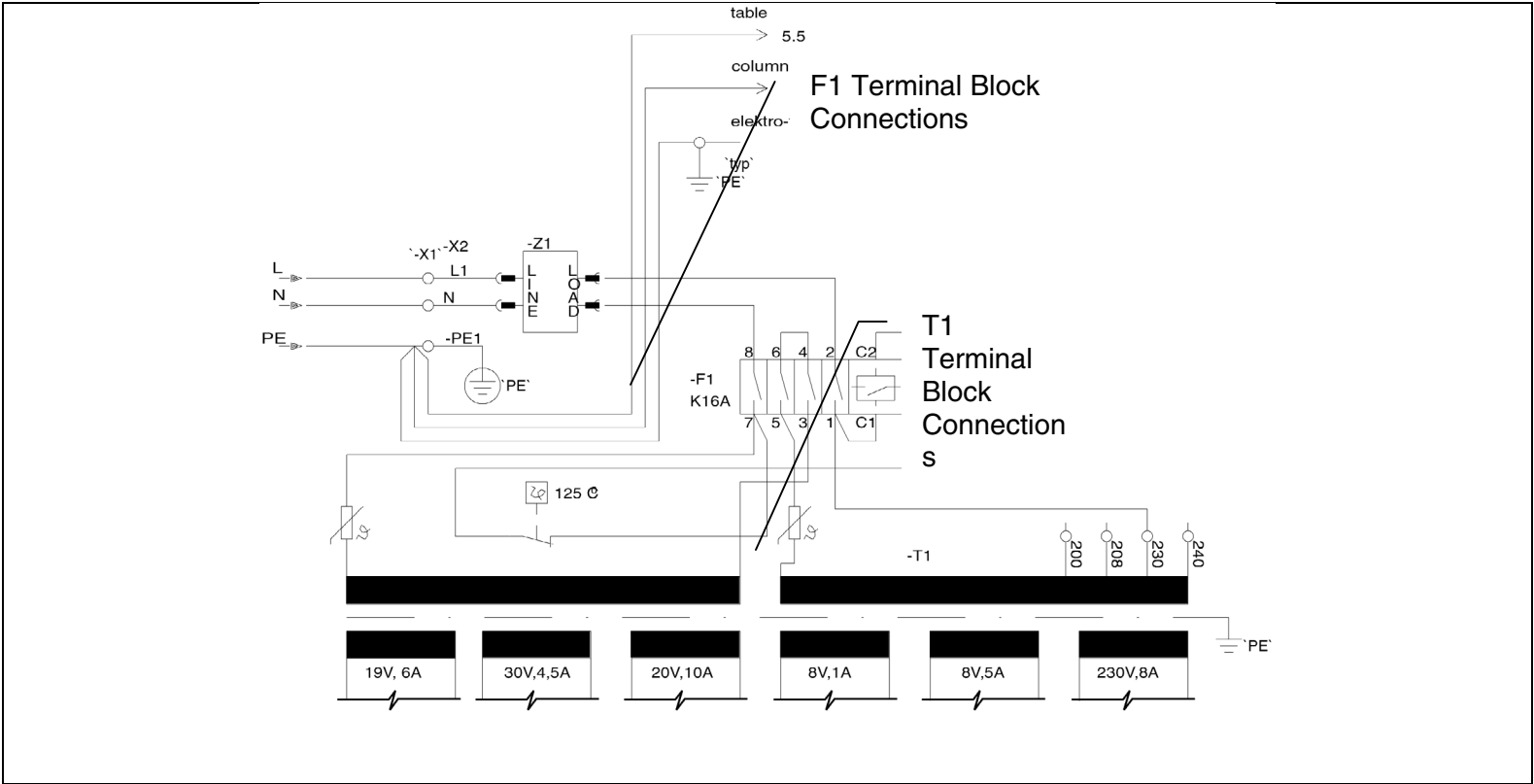
Tower/Table Transformer Strapping

In the tower, check the strapping on both the main contactor (F1), and also of the main transformer (T1). Follow these steps, while referring to the drawing below.

1. Measure single-phase facility voltage. Record in the *Checklist*.
2. In the tower, locate F1 contactor and T1 main transformer primary (see following figures).
3. Set F1 and T1 terminal block connections, according to the input voltage measured in step 1, and the table below. Record in the *Checklist*.



Tower Contactor F1 and Main Transformer



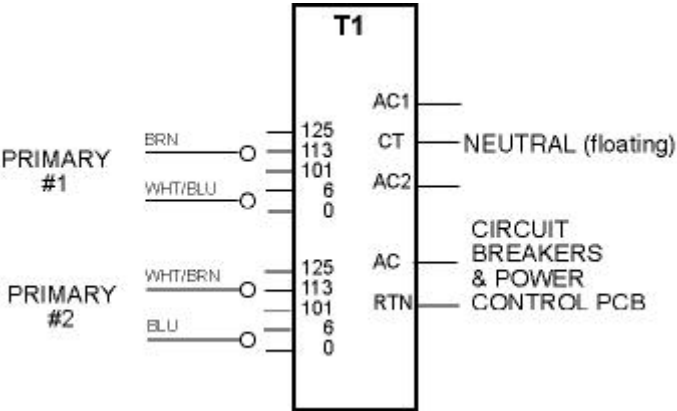
Tower Main Transformer Strapping (see following table)

If Input Voltage is above:	Place jumpers these F1 Terminal Block Connectors:	AND Place T1 Terminal Block tap on this connector:
240	4-6	240
230	4-6	230
208	4-6	208
200	4-6	200
115	2-4 and 6-8	230

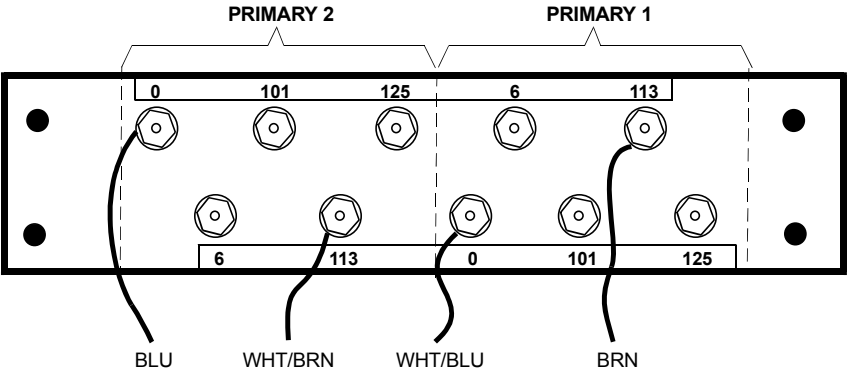
Workstation Transformer Strapping

You must match the facility voltage measure in the previous section to that of the workstation isolation transformer. To do this, you must select the correct tap voltages for the primary of the transformer, in the following order:

1. On the workstation isolation transformer T1, locate wires for Primary 1 (BRN, WHT/BLU) and Primary 2 (WHT/BRN, BLU), as shown in the following:



Partial Schematic Diagram of Workstation T1 Isolation Transformer



Isolation Transformer (T1) Primary Tap Locations

Uroview 2800 Installation Procedure

2. In the following table, determine the voltage taps that should be connected for Primary 1 and Primary 2, according to the measured input voltage of the previous section. Connect taps and record in the *Checklist*.

Note: You will be instructed on verifying workstation transformer strapping in the Power ON instructions (see *Functional Checks* section later in this manual).

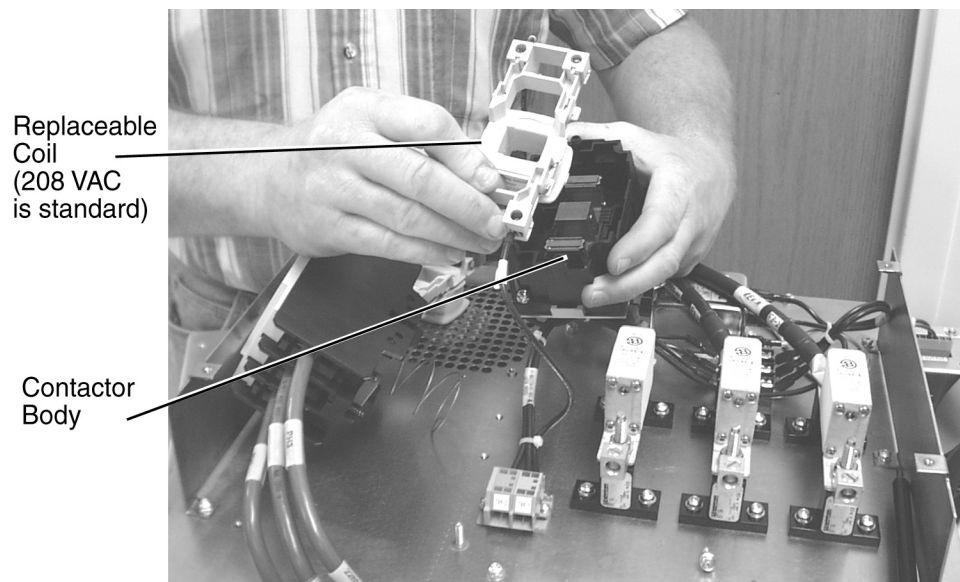
Connecting Primary Taps According to Measured Input Voltage				
Measured Voltage	Primary 1 Taps		Primary 2 Taps	
	WHT/BLU	BRN	BLU	WHT/BRN
104.0 to 109.9	6	113	6	113
110.0 to 115.9	0	113	0	113
116.0 to 121.9	6	125	6	125
122.0 to 128.0	0	125	0	125
196.0 to 207.9	0	101	0	101
208.0 to 219.9	6	113	6	113
220.0 to 231.9	0	113	0	113
232.0 to 243.9	6	125	6	125
244.0 to 256.0	0	125	0	125

Generator Main Contactor Coil

Verify correct coil in generator main contactor according to the following table. Record in Checklist.

185 – 225VAC 60 Hz (Equipped by factory)
220 – 264VAC 60 Hz (alternate)
200 – 250VAC 50 Hz (alternate)

All generator main contactors are equipped at the factory with 185 – 225VAC 60 Hz coils. If the facility power is 50 Hz, or if input voltage is 220 – 264VAC 60 Hz, you must substitute the coil in the main contactor. The coil is provided with the shipped items.



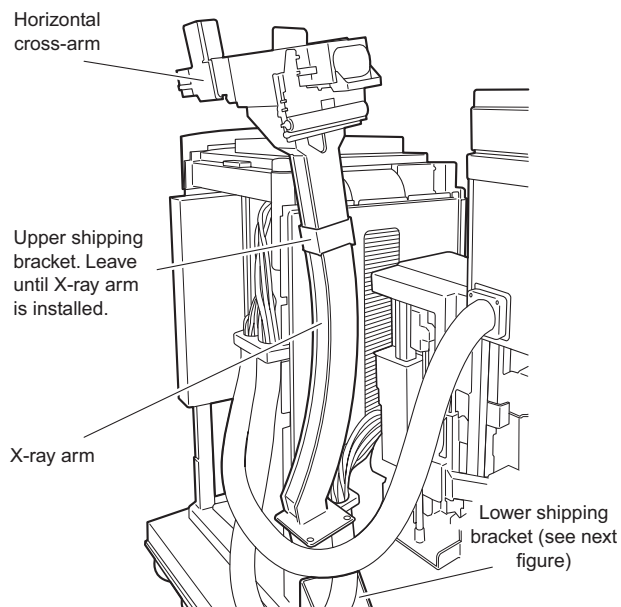
Changing the Generator Contactor Coil

Mounting the Subassemblies

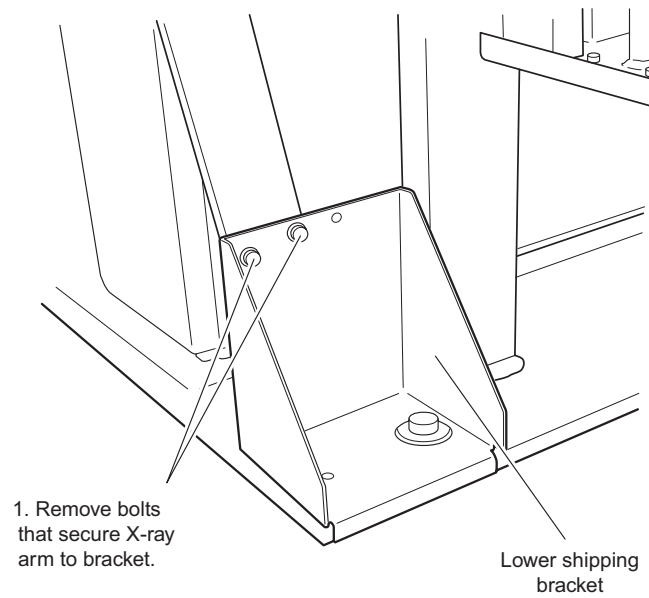
This section provides the instructions needed to mount items that were packed separately—the X-ray arm, X-ray tube, VFD, Collimator, and flat panel monitor.

X-Ray Arm

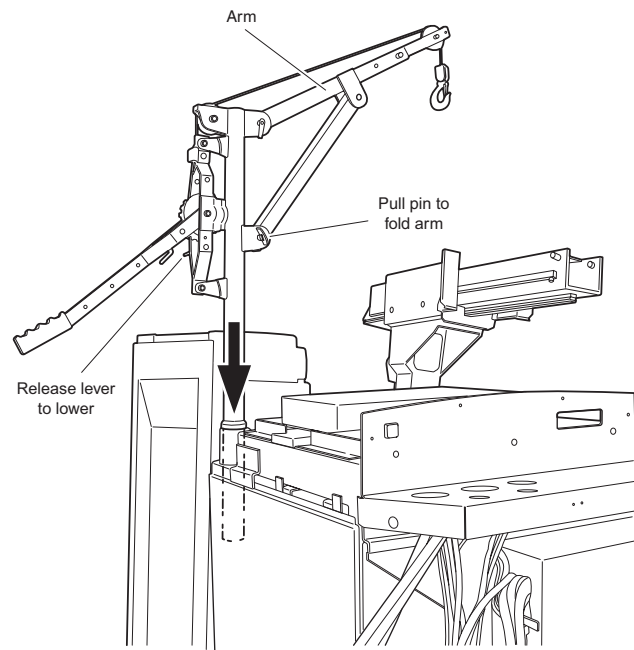
The X-ray arm and tube unit carriage are shipped in brackets attached to the tower (see the following illustration).



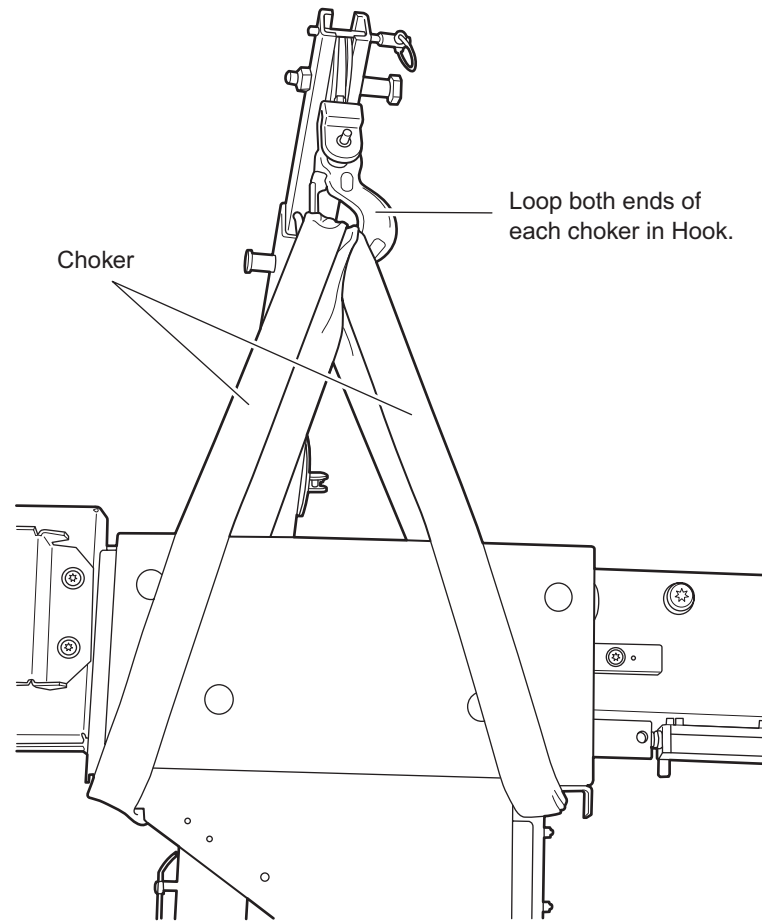
X-ray Arm in Shipping Position



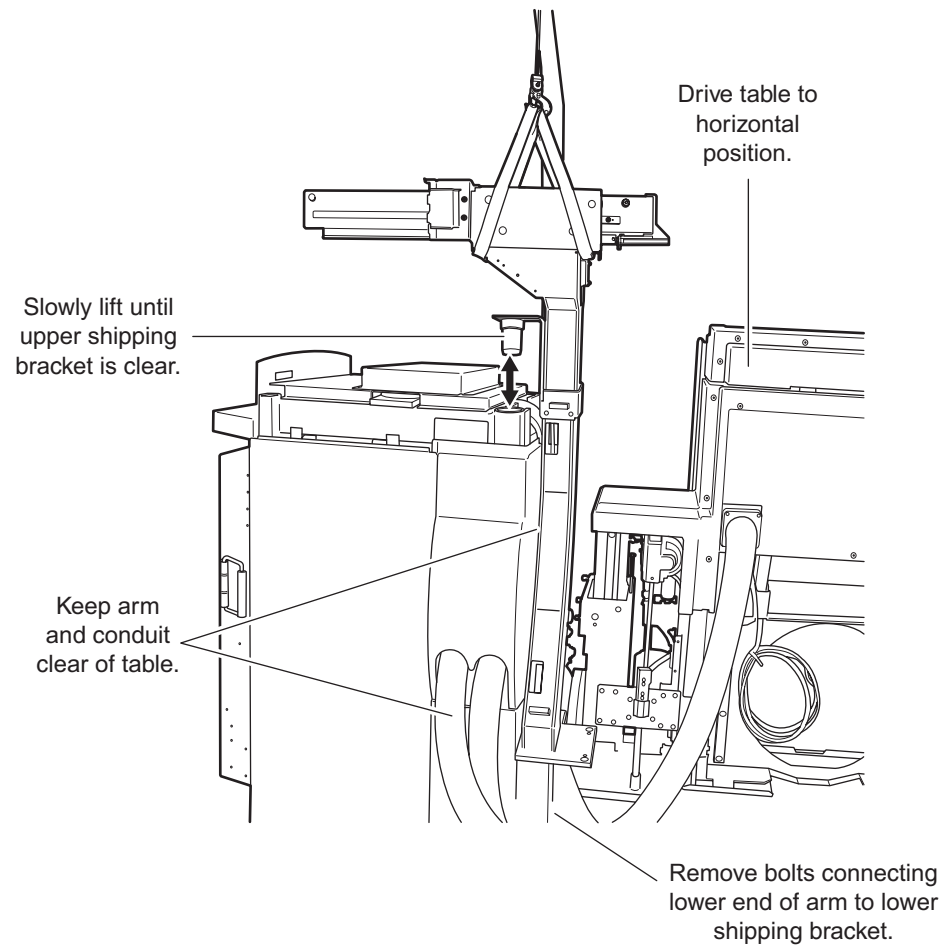
Lower Shipping Bracket Holding Bottom End of X-ray Arm



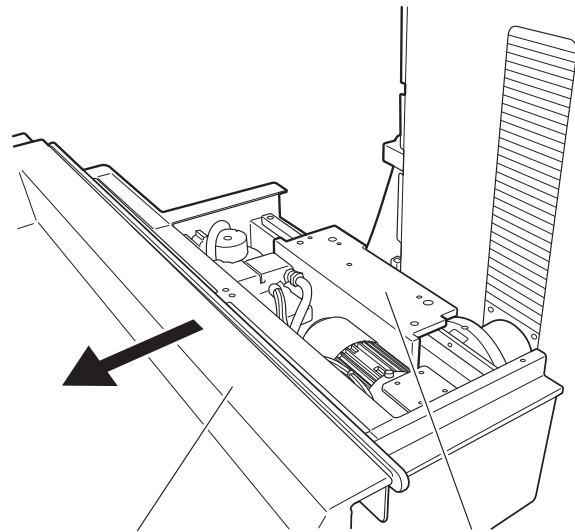
Subassembly Lifting Device Mounted on Tower



Setting up the Subassembly Lifting Device



X-ray Arm Lifted Upward, Out of Upper Shipping Bracket

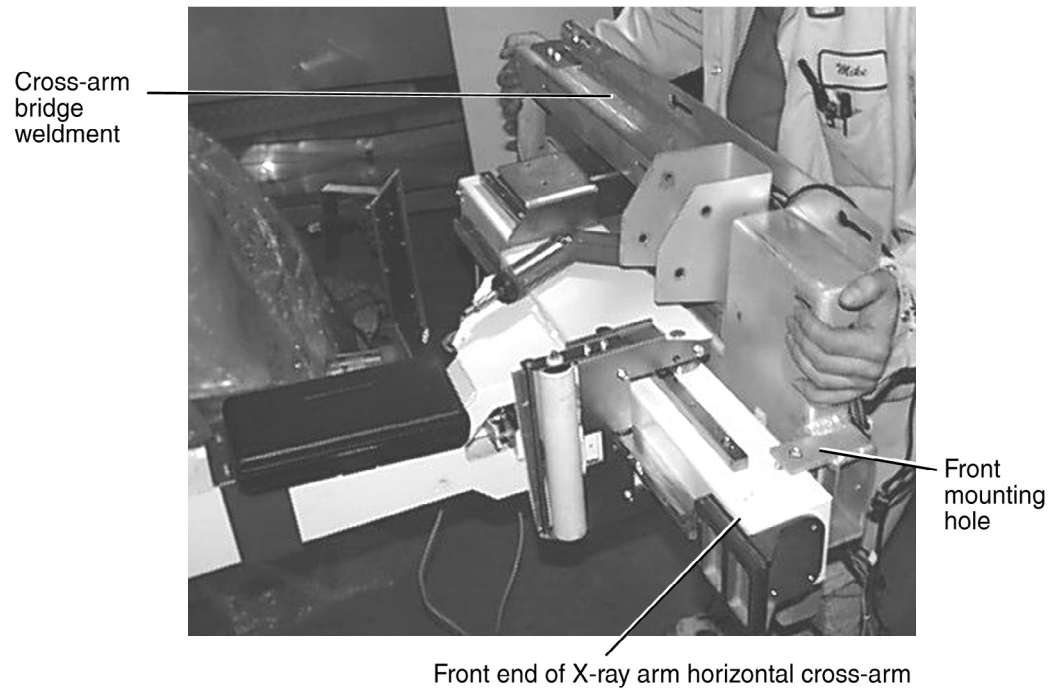


3. Move table to maximum lateral forward.

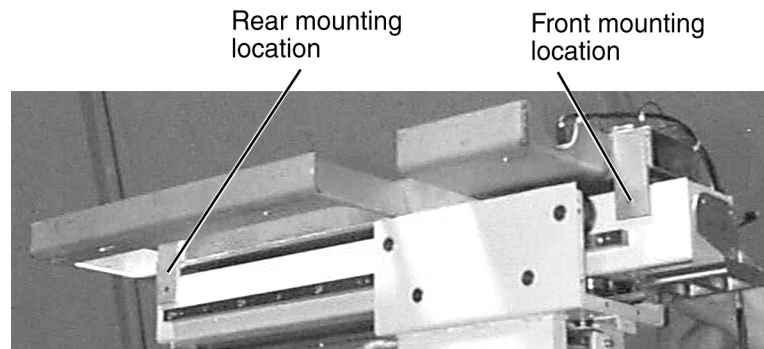
4. Remove drain panel, to access mounting location of X-ray arm.

Mounting Location of X-ray Arm

Cross-arm Bridge



Mounting the Cross-arm Bridge

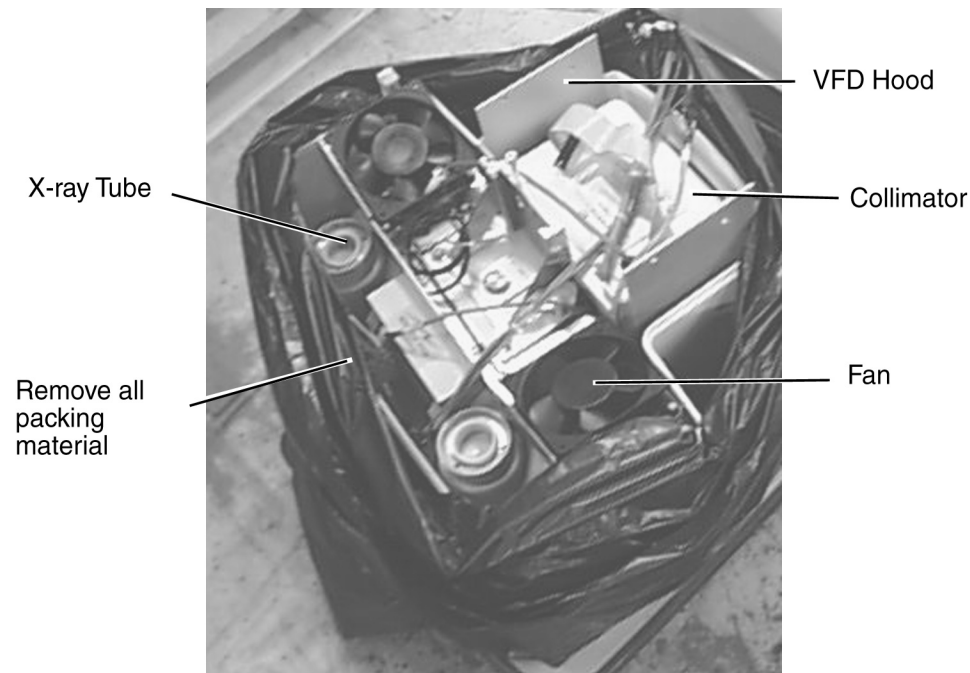


Cross-arm Bridge Attach Points

X-Ray Tube and Collimator

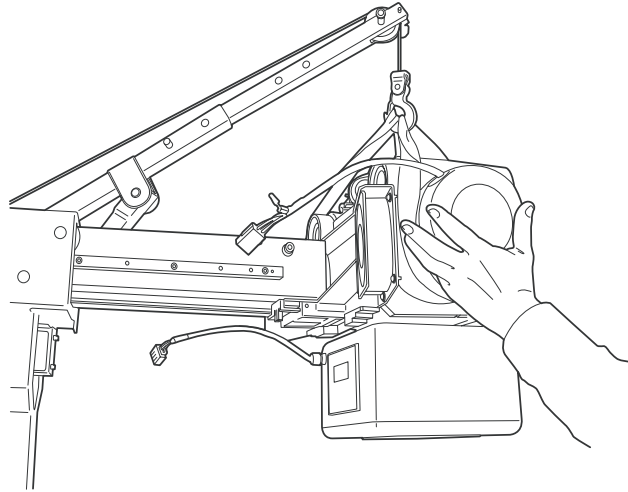
The x-ray tube is factory mounted to the collimator and fans, then installed in the collimator VFD hood. The whole assembly is packed as a unit in one of the boxes shrink-wrapped on a pallet. The collimator interface assembly is packed separately.

1. From the shipping boxes, unpack the Collimator VFD hood.



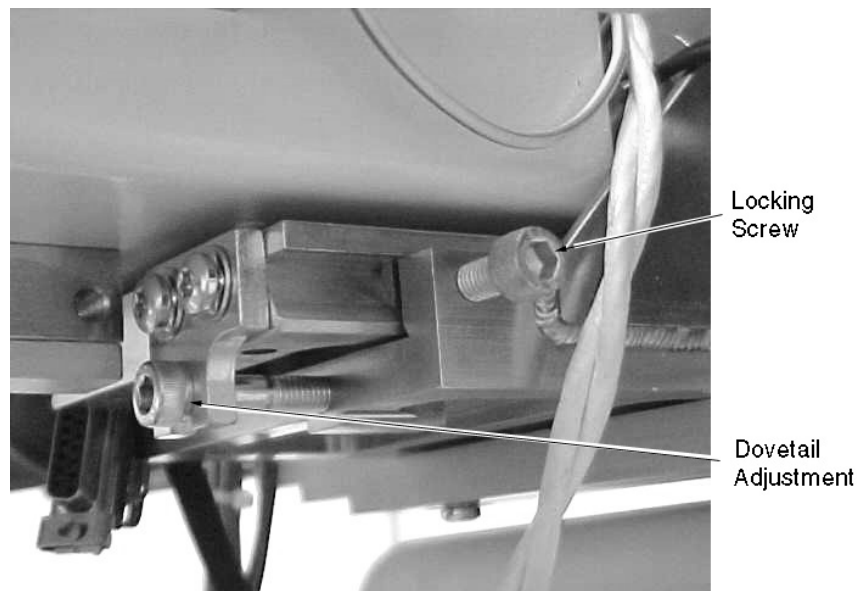
X-ray Tube/Collimator/VFD Hood

2. Remove the x-ray tube/collimator/fans assembly from collimator VFD hood.
3. Set up subassembly lifting device with choker strap on x-ray tube.
4. The combined X-ray tube and collimator attach to the end of the cross-arm by means of male and female dovetail blocks. The female dovetail block is equipped with an adjusting screw for fine positioning of the beam alignment. The adjusting screw is set at the factory, so that when you mount the X-ray tube/collimator, you have the proper alignment.



Lifting the X-ray Tube/Collimator/Fans Assembly

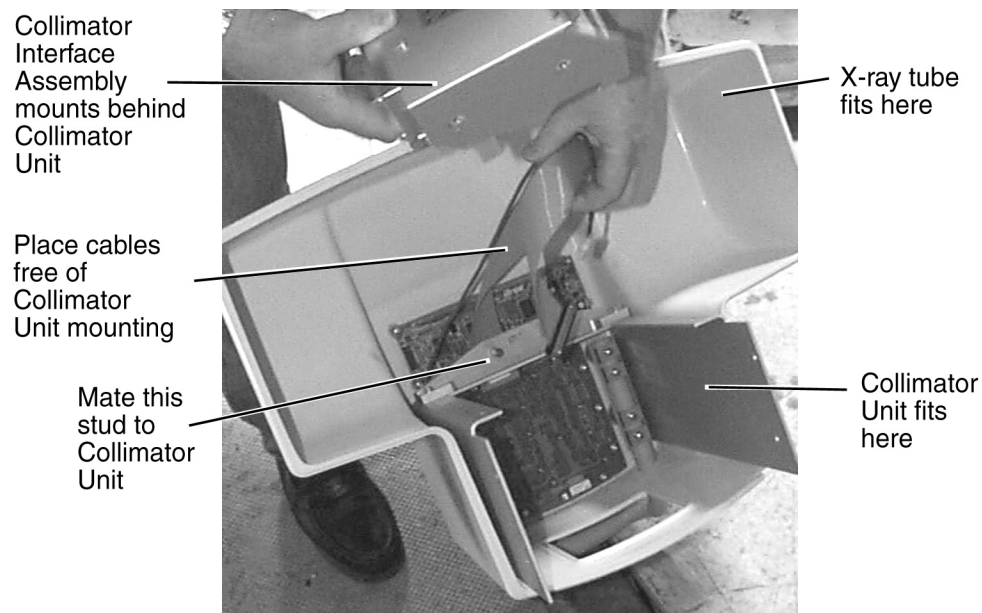
5. Slide the x-ray tube/collimator assembly along the dovetail, until against the dovetail adjusting screw. Tighten locking screw.



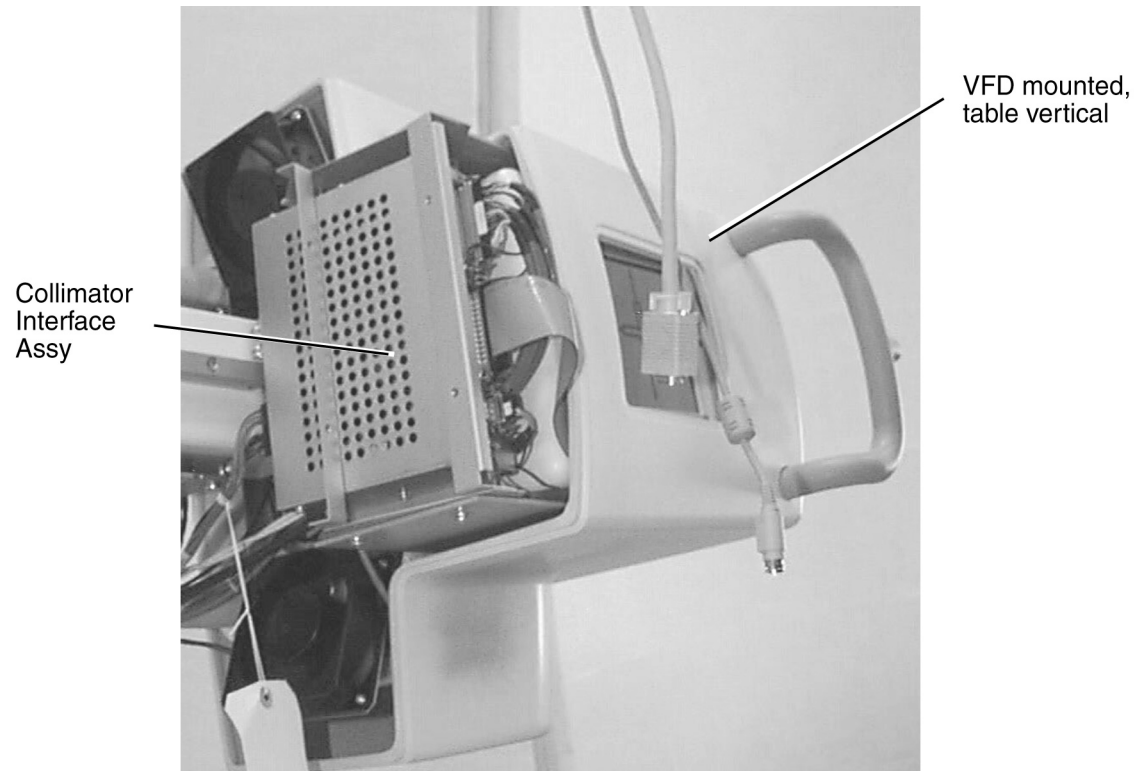
Dovetail Blocks

Collimator VFD Hood and Collimator Interface Assy

As shown in the following illustrations, mount the collimator VFD hood on the X-ray tube assembly, and mount the collimator interface assembly on the back.



Mounting the Collimator VFD Hood



Mounting the Collimator Interface Assy

CAUTION: *Do not allow collimator interface assembly to dangle by its connecting cables. Damage to cables may otherwise occur. Use two zip ties to temporarily hang in place until ready to mount.*

Image Intensifier and CCD Camera Assembly

This assembly, consisting of CCD camera and image intensifier, is mounted on the underside of the table. In addition to mounting this to the table, you must also set jumpers on the Video Conditioner PCB, located on the CCD camera. Jumpers E1 and E2 are set according to the length of the interconnect extension cable (Lemo) between the Workstation and the backpack, as follows:

Extension Cable Length	E1	E2
60 ft	1-2	1-2
40 ft	3-4	3-4
No extension	5-6	5-6

Mount the I.I./CCD camera assembly as follows:

1. Drive table to maximum vertical position.

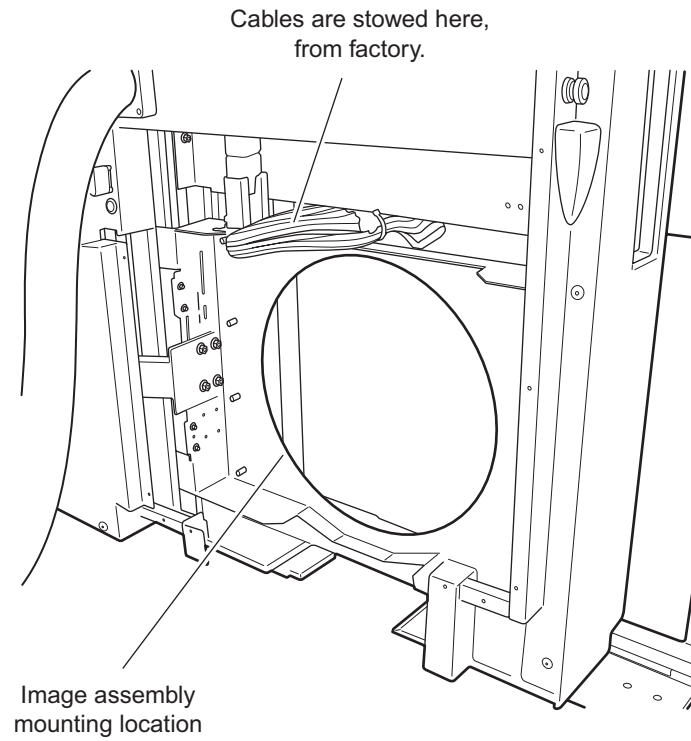
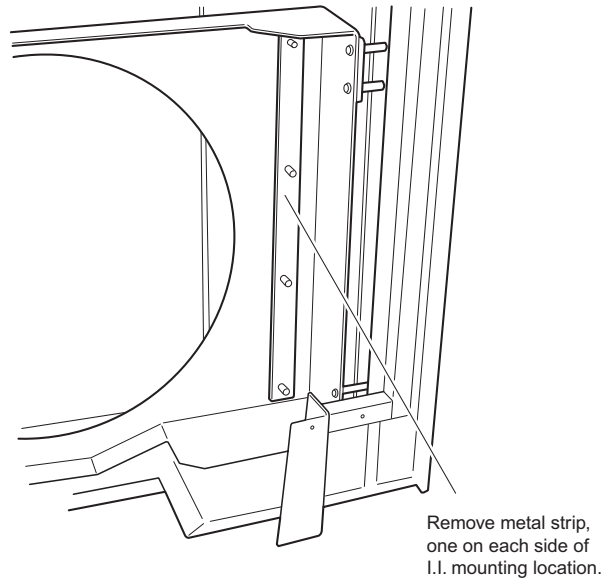


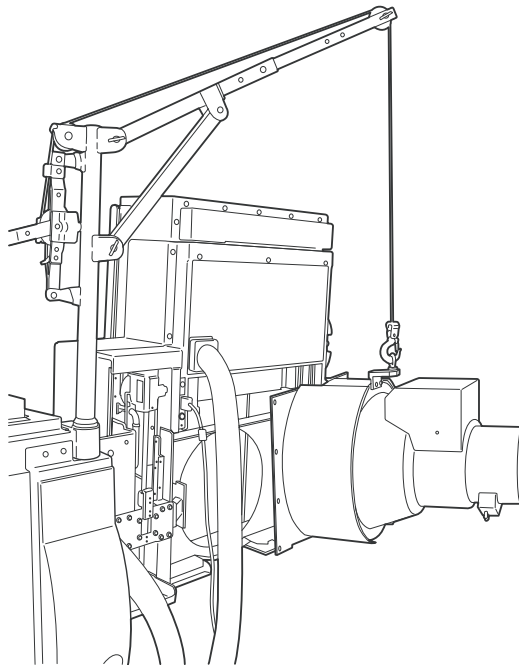
Table in Maximum Vertical Position

2. Remove metal strip from each mounting location.

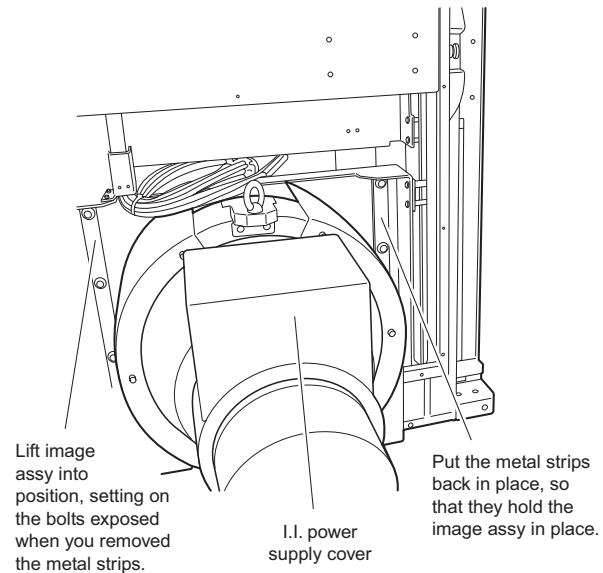


Metal Strip Removal

3. Using subassembly lifting device, lift II onto mounting location bolts.



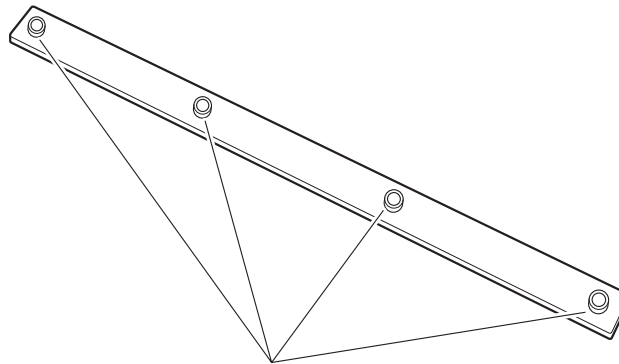
Lifting Image Intensifier Into Place



Mounting the Image Intensifier

4. Place metal strips over mounting location bolts, so they hold the II in place. Install and tighten nuts.

NOTE: Make sure raised flange around each hole in the metal strip fits through mating II mounting hole.



NOTE: Be sure the
raised flange fits into
mounting hole.

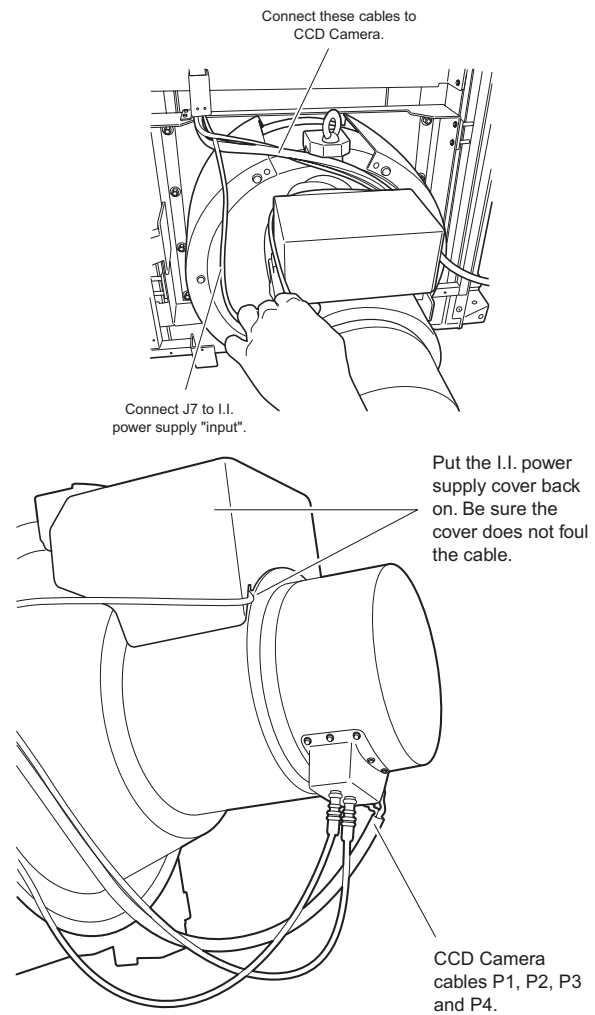
Proper Mounting Strip Orientation

5. Remove II power supply cover.
6. Connect II power supply and CCD cables.

Note: There is one more cable hanging down in this area, which you will later hook up to the Crash and Splash.

7. Replace II power supply cover.
8. Remove and discard lifting eyebolt.

Uroview 2800 Installation Procedure

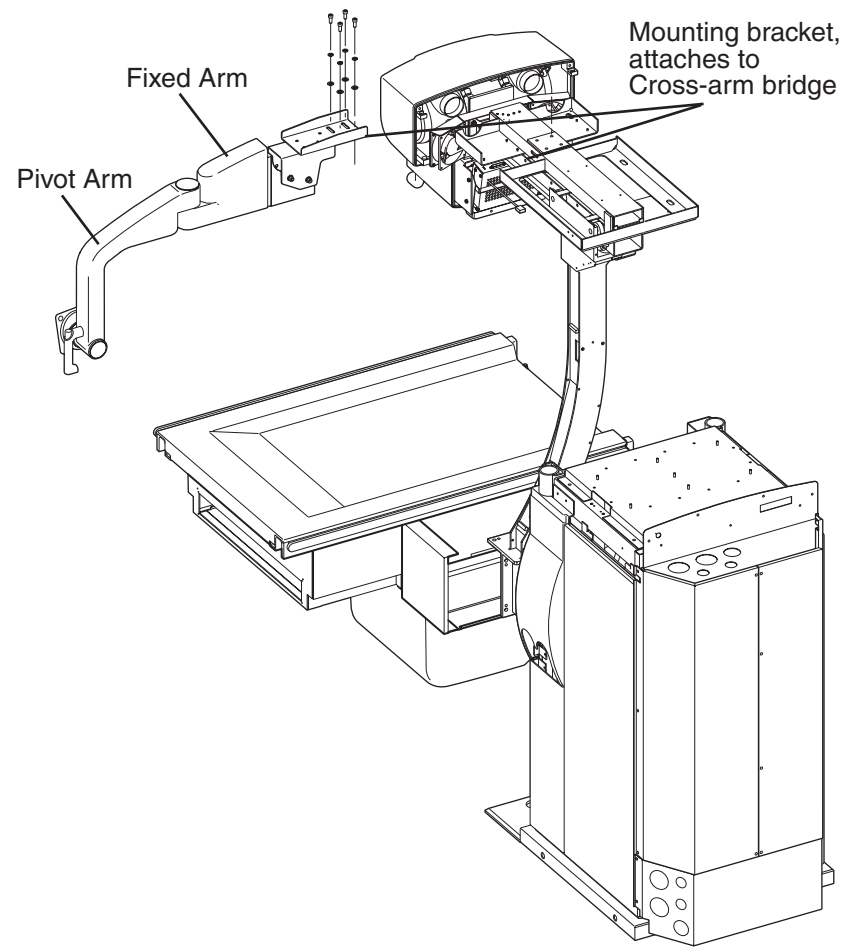


Connections to II and CCD Camera

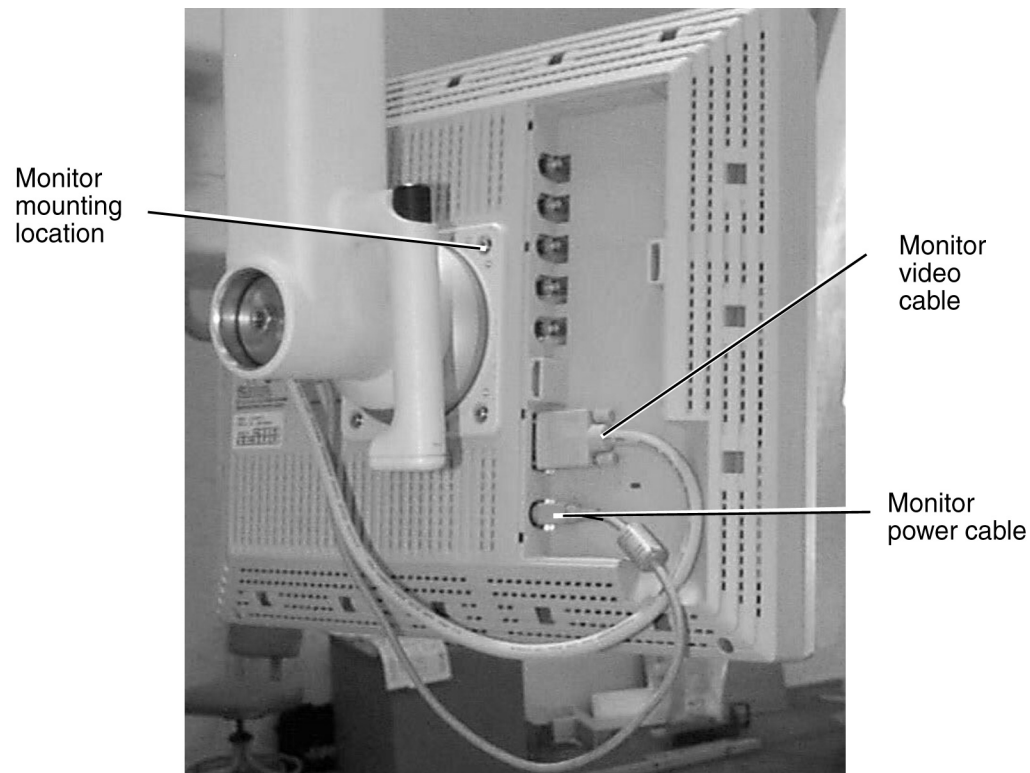
Flat Panel Display Monitor

The monitor arm consists of the fixed arm and the pivot arm. The fixed arm and pivot arm are pre-assembled. The monitor arm mounts to the cross-arm bridge.

1. Mount arm to cross-arm bridge.
2. Swivel arm to its curved position. Use a wire fish to pull cables through arm, beginning at the cross-arm end.
3. Mount flat panel monitor at opposite end of arm.
4. Connect cables.



Mounting Monitor Arm



Mounting Flat Panel Monitor

Crash and Splash

Run the table to vertical and lowest positions.

Place the splash and crash unit close enough that you can plug its cable in (remove jumper from cable connector).

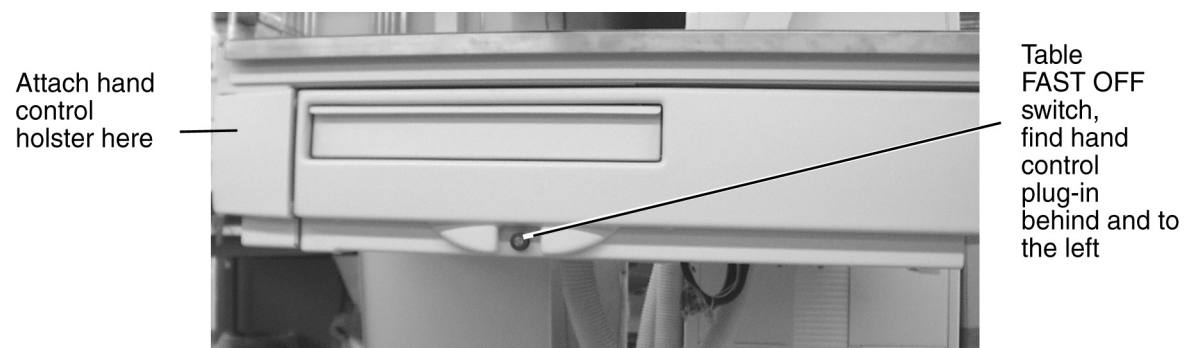
Hold in mounting position and secure with screws.

NOTE: With the table vertical, as you face the mounted splash and crash unit, its upper right corner mounting hole is unused.

Accessories

Hand Control

1. Connect hand control on the underside of the table, just behind the table Fast Stop switch.
2. Attach holster, by peeling off backing from Velcro, and firmly pressing to holster location (see following figure).

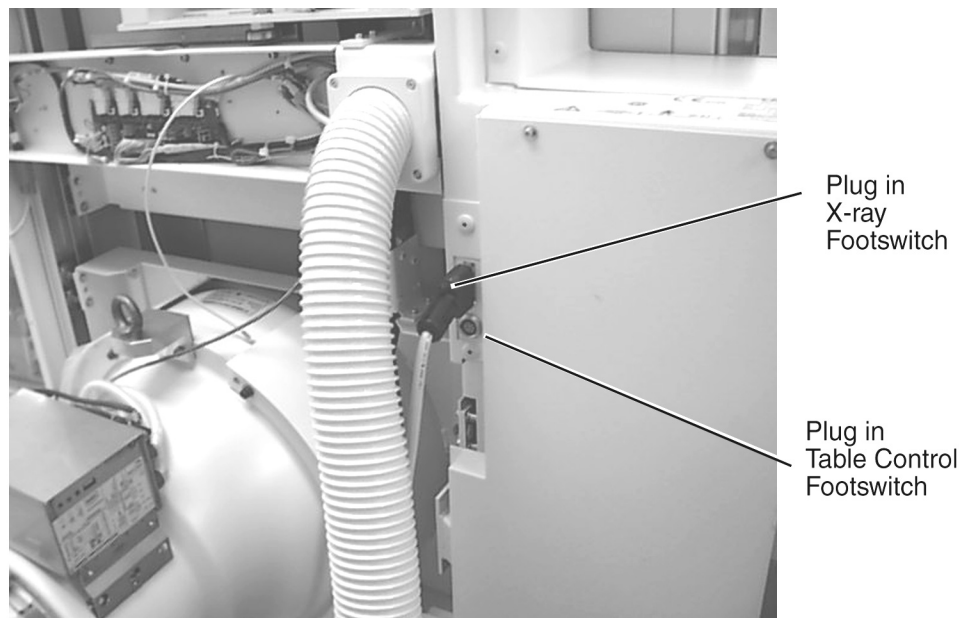


Hand Control Mounting Location

Footswitches

Note: If the table footswitch is disconnected, then reconnected while power is on, the system may require a reboot.

1. Using the hand control, elevate the table head end to access the footswitch connections under the table.



Footswitch Plug-in Locations

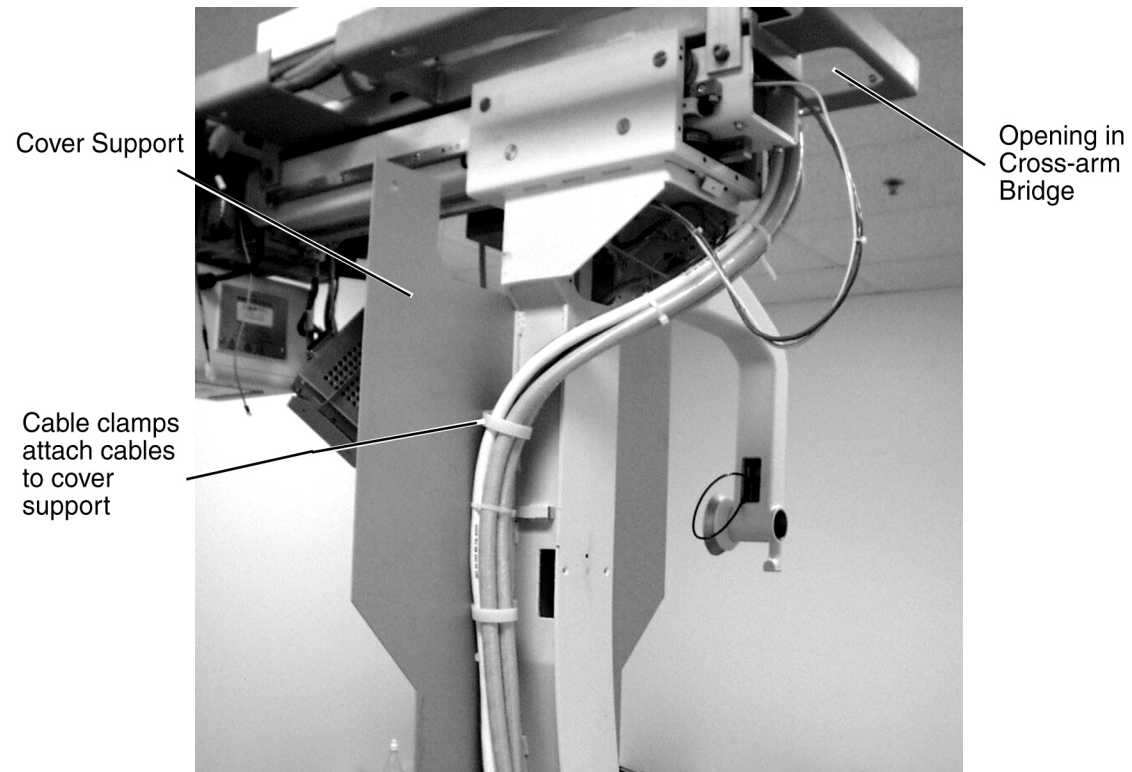
2. Connect the table footswitch by inserting and tightening the bolts.
3. Connect the X-ray footswitch by aligning the red dot with the notch in the receptacle. Push in gently. The connector should slide easily into the receptacle and lock. If the connector does not slide easily, rotate slightly in order to align the notch and red dot.

Subassembly Cabling

This operation consists of hooking up all cables and wires between the tower/table and the subassemblies installed on the cross-arm. At the factory, these cables are connected at the tower/table end, and bundled together, ready for installing on the X-ray arm. To install the cables, proceed as follows:

1. Move X-ray arm to storage position (full lateral).

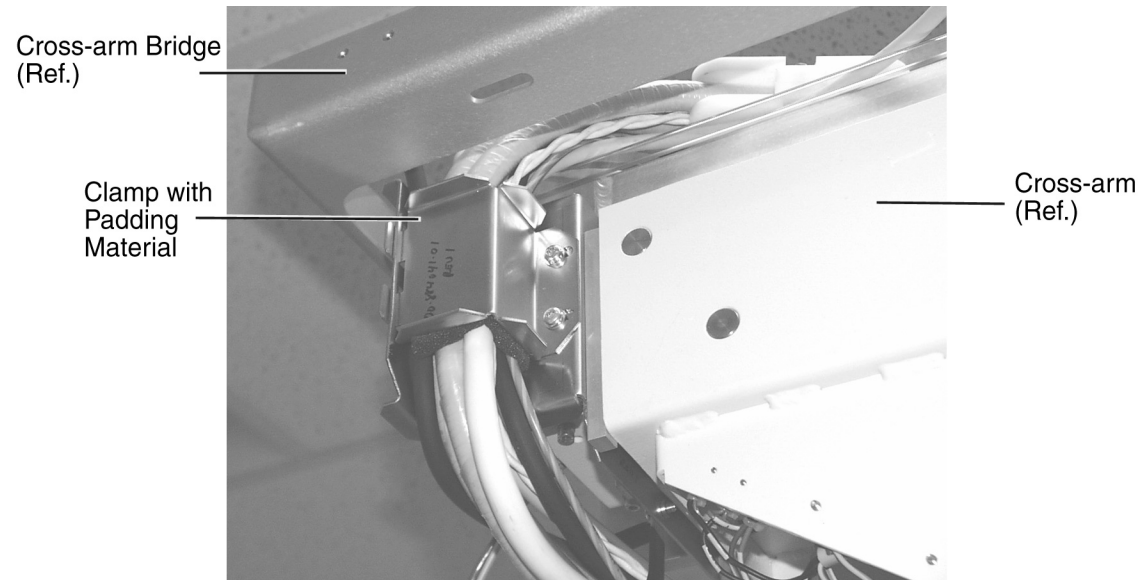
2. Install cover support.



Mounting Cover Support

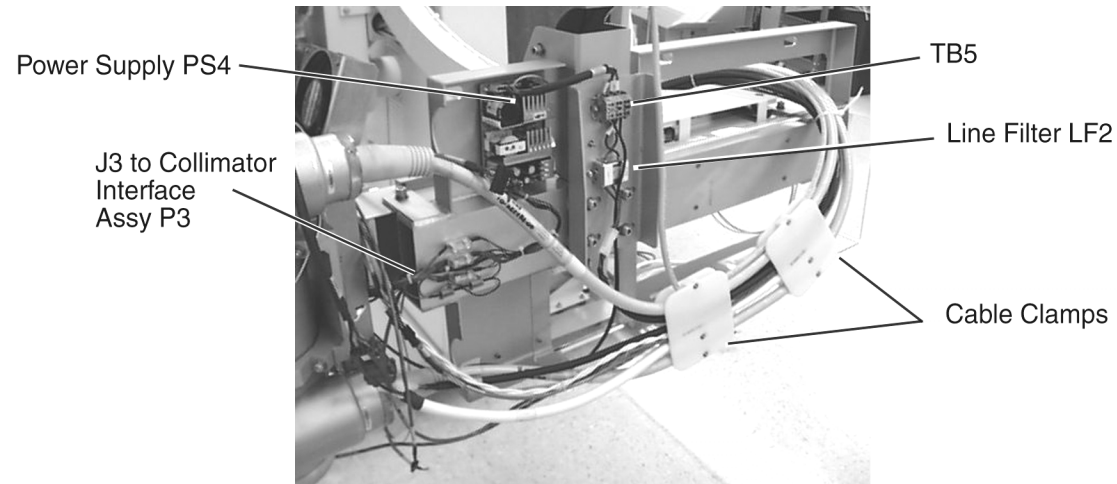
Uroview 2800 Installation Procedure

3. Insert bundle up through bottom of cross-arm bridge.
4. Place bundle in cable clamp with padding material provided.



Cable Clamp with Protective Material

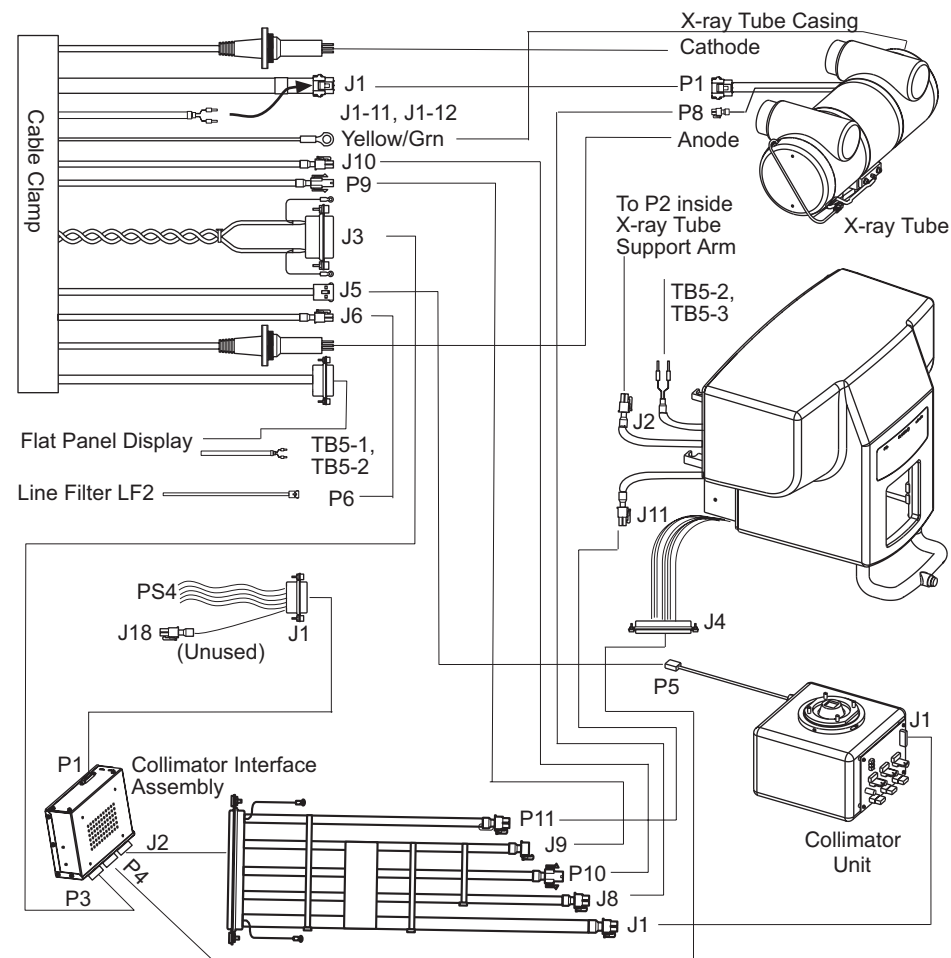
5. Place cables in large cable clamps atop cross-arm bridge (see next figure).



Arrangement of Cables On Cross-Arm Bridge

Note: Cable lengths require making sure you place the cables in the order shown in the large cable clamps.

6. Connect wires and cables extending out of the large cable clamp to the subassemblies installed above (see next figure).



Subassembly Cable Connections

Functional Checks

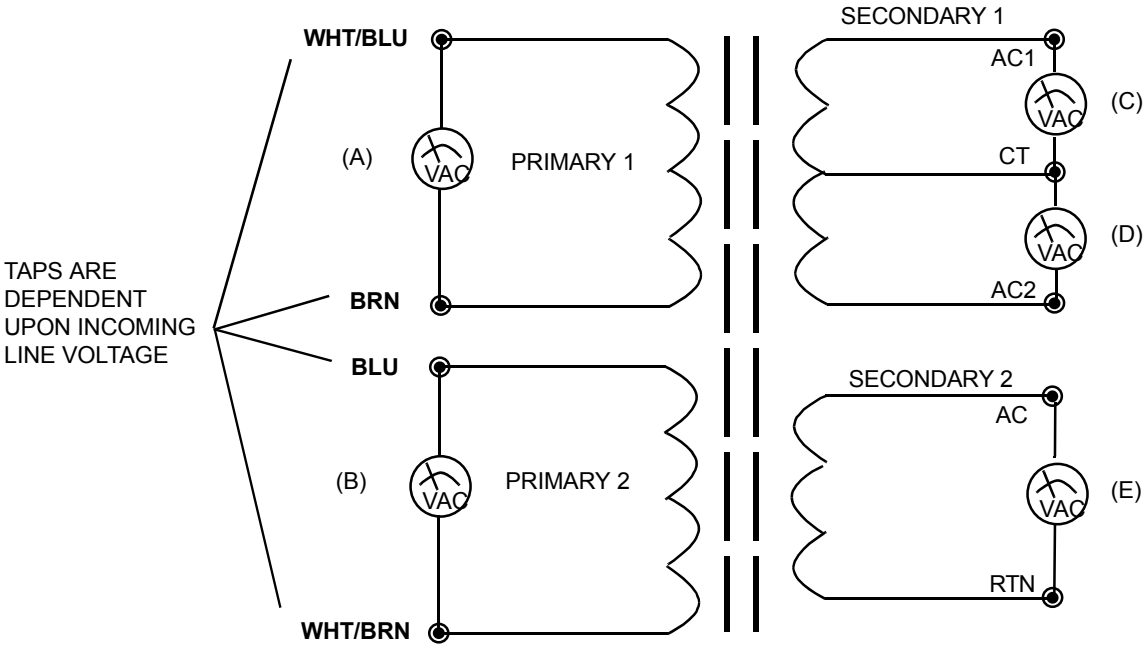
Power ON System

In the Power ON System function tests, you will verify the following:

1. In the tower, place the F1 circuit breaker in the OFF position
2. In the facility power junction box, turn on only the circuit breaker that goes to TB1 on the rear panel of the tower.

Warning: *The following steps require measuring live power in the Workstation. Use appropriate precautions.*

3. Verify correct workstation transformer strapping with power on, as follows:
 - A. Place the workstation power switch in the ON position.
 - B. Measure both primary and secondary voltages as indicated in the following diagram.



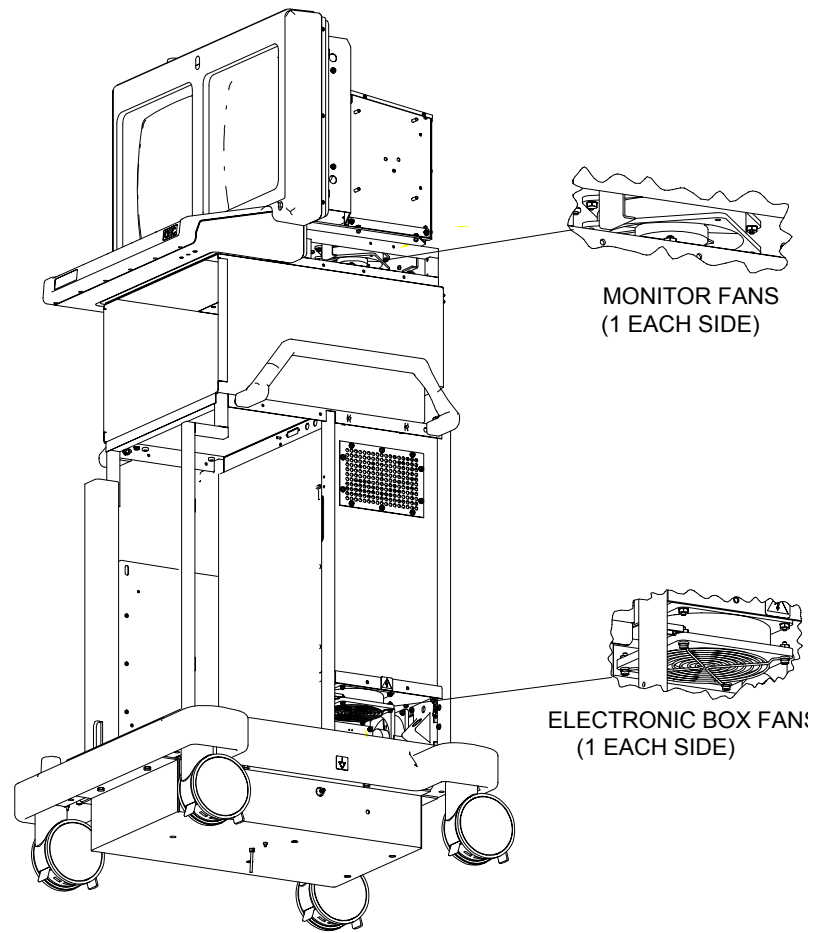
Workstation Isolation Transformer VAC Measurement

- C. Use the following table to verify that the measured voltages meet the specification. Record the measured values in the corresponding table in the *Checklist*.

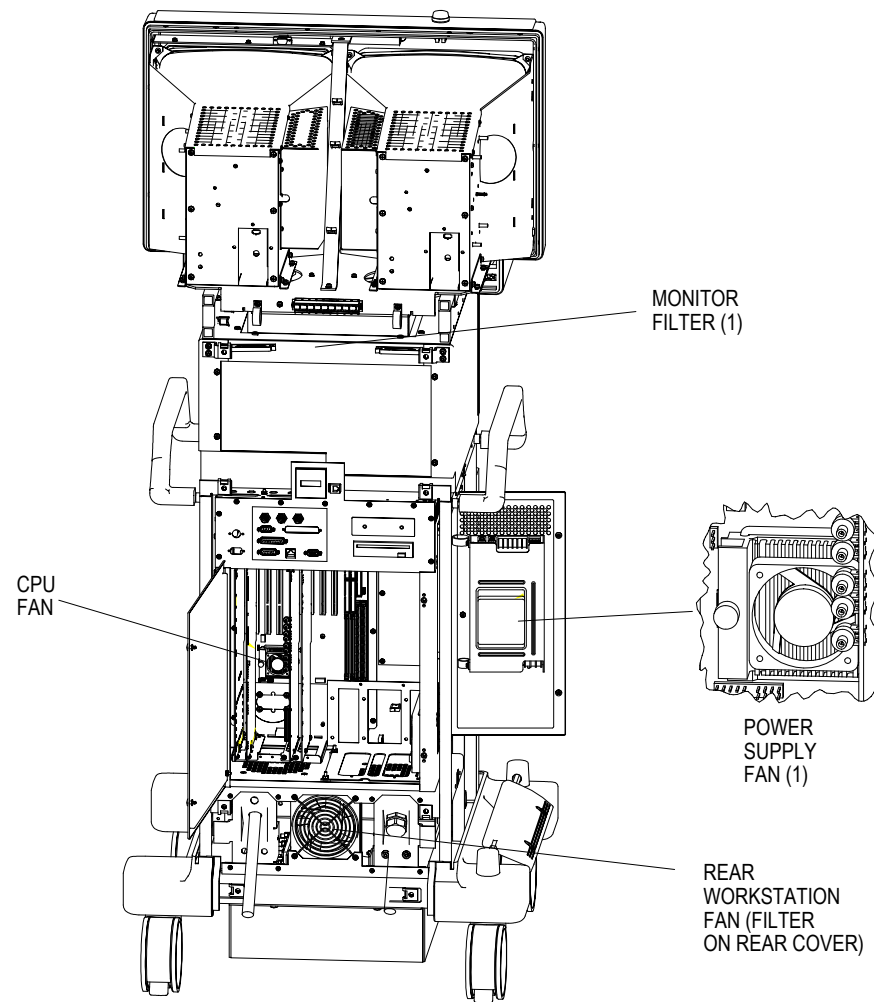
*Ref	Transformer winding	From	To	Spec
A	Primary 1 winding	WHT/BLU	BRN	Measured input VAC*
B	Primary 2 winding	BLU	WHT/BRN	Measured input VAC*
C	Secondary 1	CT	AC1	119 VAC $\pm$ 3.0
D	Secondary 1	CT	AC2	119 VAC $\pm$ 3.0
E	Secondary 2	RTN	AC	119 VAC $\pm$ 3.0
* Input voltage measured at single-phase source (see <i>Transformer Strapping</i>).				

System Initialization

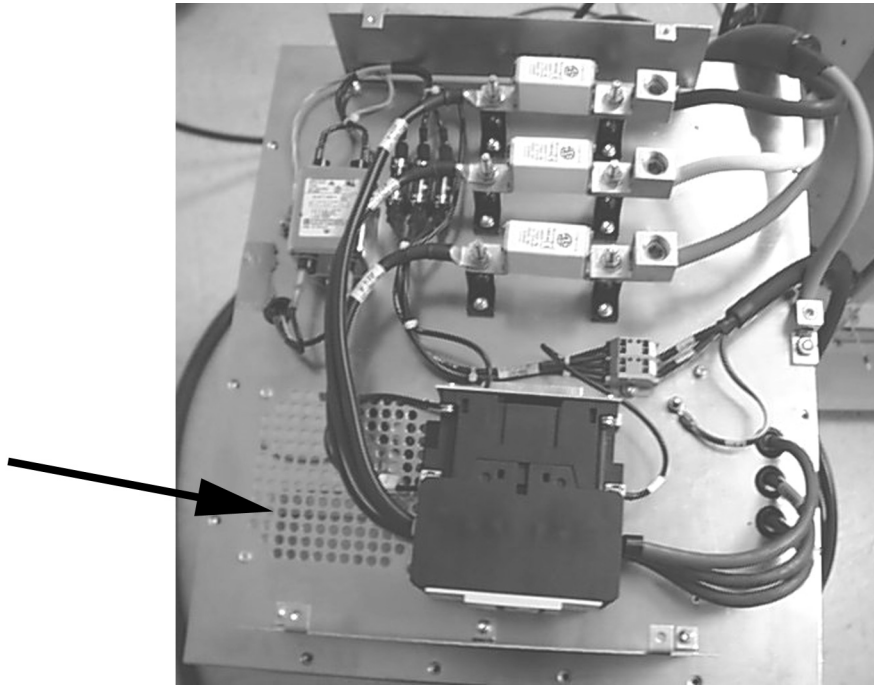
1. In the tower, place F1 circuit breaker in the ON position (workstation is on).
2. Verify the following:
 - A. The table boots up (listen for a single beep from inside the tower).
 - B. Table motion (don't worry about checking all table motion until later).
 - C. The workstation completes software boot and initialization with no errors reported on the workstation displays.
 - D. The flat panel display lights up.
 - E. The two VFDs are lighted, and display no error messages.
 - F. The workstation and tower elapsed time meters are functional.
 - G. All cooling fans are operating on the workstation, tower/table, and generator (see the following illustrations).



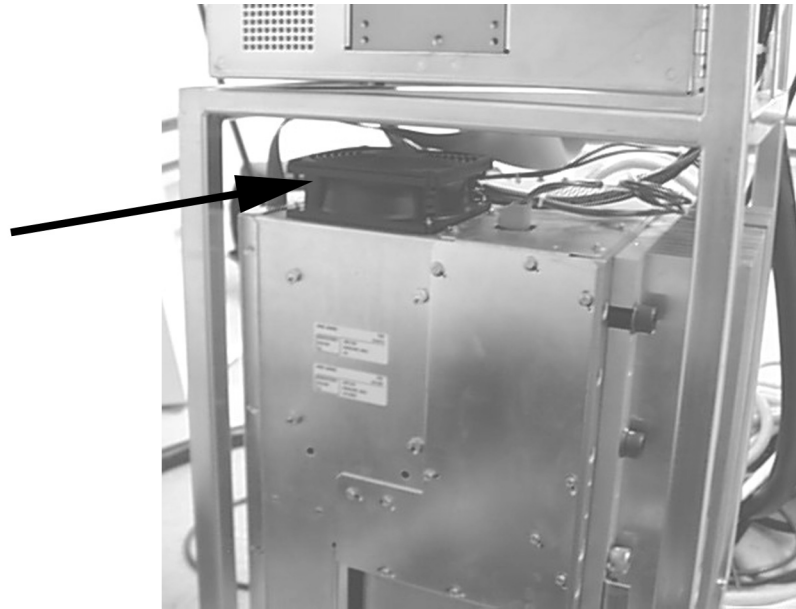
Workstation Fans (View 1 of 2)



Workstation Fans (view 2 of 2)



Generator Upper Fan



Generator Lower Fan

Table Initialization

1. Turn off the workstation.
2. Press SW1, the switch on the back of the tower. Verify that the table boots, and will move; collimator hood, X-ray Control Console, and flat panel displays light up.
3. Press SW1 again to shut off powered-up circuits.

Generator Initialization

1. Install the clear plastic cover on the generator power assembly (the top area of the generator).
2. In the facility power junction box, turn on the 400-480 VAC circuit breaker.
3. Turn on the workstation power switch. Verify the following:
 - A. Table boot and motion.
 - B. All displays light up, with no errors displayed.
 - C. Generator boots up (listen for beep in generator).
4. Verify that the X-ray system will take a shot at minimum mAs.

Fast Stop

Check Fast Stop switches, located on the table and X-ray Control Console, as follows:

1. Place the workstation power switch in the ON position.
2. Press either of the FAST STOP switches and verify the following:
 - Table motion is disabled
 - The message FAST STOP BUTTON PRESSED – UNLOCK THE BUTTON TO CONTINUE is displayed on the VFD displays.
 - X-ray generation is disabled.
3. Release the FAST STOP switch and reboot by placing the workstation power switch in the OFF position for five seconds and then back to ON.
4. Verify system initialization conditions (see *System Initialization*, above).
5. Verify operation of the other Fast Stop Switch.

Crash and Splash

While applying hand pressure against the side of the Crash and Splash, attempt to drive the table downward. Verify that the table stops, and the message TABLE BLOCKED appears on both VFDs.

Line Voltage Regulation

Verify generator input line voltage regulation as follows:

Warning: *Electrical circuits at the top of the generator use voltages that could seriously kill or injure you. Use appropriate precautions.*

Note: *In the following steps, the 400-480 VAC measured at the generator power assembly will drop immediately after the exposure is started. Read the meter at this time.*

1. Shut off all facility power to the system.
2. To each of 2 legs of the generator input power, fasten alligator clips with insulated wire leads. Connect these wires in a safe manner to a voltmeter set to measure generator input power (400-480 VAC).
3. Make sure the cover for the generator power assembly (top of generator) is in place.
4. Turn on the workstation power switch, and verify successful bootup as previously done.
5. Measure the generator input voltage (Voltage No Load = V_n).
6. Measure the generator input voltage again (voltage loaded = V_l) while making a radiographic exposure at maximum mAs.
7. Calculate the percentage line voltage regulation using the following formula and record the results on the *Checklist* form:

$$100 \times \frac{V_n - V_l}{V_l} =$$

8. Repeat steps A through F with one of the alligator clips on a different phase (not phase sensitive). Record in the *Checklist*.

9. If the results above do not fall within the range of 0 - 15 %, inform the hospital administration that they will need to correct this problem. (This problem results in a violation of a provision of the Federal Performance Standards 21 CFR 1020.30)

Imaging Functions

WARNING: *Some of the following procedures produce X-rays. Take appropriate precautions.*

Image Orientation

1. Image Rotation key rotates the image clockwise and counter-clockwise.
2. Image Invert key inverts and re-inverts the image.

Image Resolution

WARNING: The following procedure generates X-rays. Take appropriate precautions.

1. Power on the system by pressing the Workstation on button.
2. Turn on the Collimator Lamp by pressing the Lamp key.
3. Place the Converging Resolution Tool on the table-top, in the X-ray field, at a 45 degree angle to the table.
4. Verify that Fluoro mode is selected, and make an exposure by pressing an X-ray switch.
5. Verify that the video image is displayed on the Workstation's left monitor.
6. Verify that the limiting image resolution is greater than the minimum line pair/millimeter specifications listed for the system's image intensifier size:

II Size	NORM 60/50 Hz	MAG1 60/50 Hz	MAG2 60/50 Hz
14-inch	≥ 2.0 LP/mm	≥ 2.1 LP/mm	≥ 2.4 LP/mm
16-inch	≥ 1.8 LP/mm	≥ 2.1 LP/mm	≥ 2.4 LP/mm

Flat Panel Display Video, Shift and PIP

The Video Standards Converter (VSC) must have one optional video source to perform this test (see *Optional Video Connections*, in the System Cables section previously in this manual).

WARNING: *The following procedure generates X-rays. Take appropriate precautions.*

1. Either generate an X-ray to display on the Workstation's left monitor or access an archived image using the Workstation's Image Directory.
2. Verify that the image displayed on the left monitor is also displayed on the Flat Panel Display (FPD).
3. Set up the optional video source.

Note: A gray image will be displayed on the FPD if the selected video source is not present at the VSC.

4. Press the Video Shift button and verify that the optional source is now displayed on the Flat Panel Display.
5. Press the PIP button and verify that the currently selected video source is now visible as a background image and OEC Hi-Res is displayed in the PIP window.
6. Press Video Shift again and verify that the full screen image and PIP image swap places.
7. Press PIP again and verify that the PIP window closes and only the OEC Hi-Res is displayed.

Remote Workstation Operation

1. Press the SAVE key and verify that it saves left monitor image to the Workstation hard-drive.
2. Press the SWAP key and verify the image on the left monitor shifts to the right monitor.
3. Press the MODE switch located on the X-ray Control Console, and verify a dumb beep.

Collimator Control

1. On the central table control (VFD hood) press each collimator motion switch and verify that the graphical icon indicates the correct collimator function.
2. On the XCC, press each collimator switch again while pressing the X-Ray ON switch and verify collimator leaves open and close.
3. On both the XCC and central control panel, press the collimator field light. Verify that the light visually defines the area to be exposed to X-rays.
4. Set a collimation size larger than the film size. Press the collimator preset button, verifying that the collimation size reduces to the film size.
5. Set a collimation size smaller than the film size. Press the collimator preset button, verifying that the collimation size does not change.

X-Ray Functions

This section provides testing and verification instructions for the following functions: Film Exposure, Auto Technique Tracking, High-level Fluoro, Pulsed Image, Digital Spot, and Low Dose Mode Operation.

Film Exposure

1. Select FILM mode.
2. Take a 120 kVp 100 mAs shot and verify that three beeps are heard after the exposure and no errors are displayed.
3. Take a 100 kVp 300 mAs shot and verify that three beeps are heard after the exposure and no errors are displayed.

Auto Technique Tracking

1. Select Auto Fluoro mode and the NORM field size.
2. Verify that the kVp tracks accurately according to the following table, as copper filters are taped to the collimator.
3. Record the kVp value in the corresponding table in the *Checklist*.

Copper Filters	KVp range
1	61 kVp $\pm$ 3 kVp
2	71 kVp $\pm$ 3 kVp
3	79 kVp $\pm$ 3 kVp

High-level Fluoro

1. Select HLF mode.
2. Cover the II with 4 layers of lead aprons and press the right Foot/handswitch.
3. Verify that the audible tone beeps at twice the normal rate.
4. Verify that the mA is driven higher than the Fluoro limit of 10 mA.

Pulsed Image

1. Select PULSE mode via the XCC.
2. Select a pulse rate of 4 PPS via the Workstation Mode screen and press the right foot/handswitch.
3. Verify that the audible tone beeps at twice the normal rate and the X-ray indicator flashes.
4. Select a pulse rate of 8 PPS via the Workstation Mode screen and press the right foot/handswitch.
5. Verify that the X-ray indicator flashes at approximately twice the rate as the previous step.
6. Verify that the mA is driven higher than the Fluoro limit of 10 mA.

Digital Spot

1. Select DIGITAL SPOT.
2. Press the right hand/foot switch.
3. Verify that a short-term HLF exposure is taken and automatically saved to the Workstation hard-drive.
4. Remove the 4 layers of lead aprons from the II.

Low Dose mode operation

1. Press the Low Dose key. The corresponding LED will illuminate when Low Dose mode is selected.
2. Press the Low Dose key again to deselect Low Dose mode. The corresponding LED will extinguish.
3. Press and hold the ALARM RESET key for approximately 2 seconds. Verify the Fluoro time displayed on the Tower/table Control Panel is reset to zero.

Beam Alignment Test

This section provides verification instructions for verifying alignment of the Fluoro and Film beams. If a film processor is not located on site, is not functional, or is unavailable, it will not be possible to perform this test. GE OEC may follow up with the customer to verify any reasons listed for not performing the beam alignment test. Record the information asked for in the corresponding sections of the Checklist.

WARNING *The following steps produce X-rays. Use appropriate precautions.*

Omit the Film portion of this procedure when verifying Beam Alignment on systems without film capability. For regulatory purposes, SID measurements are: Film = 45-inches, Fluoro = 47-inches. If Beam Alignment Verification fails, perform a Beam Alignment procedure. Refer to the Calibration section of the 2800 Service Manual.

Fluoro Alignment

1. With Auto Fluoro enabled, take a NORM field shot and verify all four leaves show in the image.
2. Take a MAG1 field shot and verify all four leaves show in the image.
3. Take a MAG2 field shot and verify all four leaves show in the image.
4. Turn on the Collimator Lamp.
5. Select Fluoro Mode and verify you can collimate to less than 5 cm x 5 cm, as indicated by the illuminated area.

Film Alignment

1. Set the technique to 40 kVp @ 100 mAs and enable AEC mode.
2. Fully open the collimator leaves and collimate the leaves in approximately 1-inch.
3. Take a film exposure and then develop the film.
4. Fold the film and verify longitudinal centering is within 0.45 inches (1% x 45" film SID).
5. Fold the film and verify lateral centering is within 0.45 inches.
6. Take another film shot with the collimator leaves fully open. Verify at least three edges of the X-ray beam can be seen on the film.
7. Turn on the Collimator Lamp.
8. Select Film Mode and verify you can collimate to less than 5 cm x 5 cm, as indicated by the illuminated area.

Automatic Exposure Control Check

1. If not already done, perform Beam Alignment Tests, as instructed in the previous section.
2. Take a film shot with collimator leaves fully open.
3. Verify factory setting of 1.2, using film densitometer.
4. Obtain film density approval from appropriate hospital personnel. If they want a different film density, see *Automatic Exposure Control* in the Calibration section of the service manual.

Workstation Check

WARNING *This procedure produces X-rays. Take appropriate precautions.*

1. Verify the EDGE ENHANCEMENT function displays an indicator bar and that the amount of edge enhancement can be increased and decreased.
2. Verify the NOISE FILTER function displays an indicator bar and that the amount of filtering can be increased and decreased. The noise in the image should decrease as noise filtering is increased.
3. Verify the ZOOM function displays a square box known as the region of interest (ROI) and that you can magnify the ROI by touching the 2X and 4X buttons.
4. Verify the NEGATE function reverses the light and dark values on the image displayed on the left monitor.
5. Verify the CONTRAST function displays an indicator bar and that the amount of contrast can be increased and decreased.
6. Verify the BRIGHTNESS function displays an indicator bar and that the amount of brightness can be increased and decreased.
7. Verify the AUTO CONTRAST/BRIGHTNESS automatically selects the optimum values of contrast and brightness.
8. Verify the SWAP function exchanges images from the left and right monitors (need to have two different images on the left and right monitors).
9. Verify the SAVE function saves the image on the left monitor to the Workstation's hard drive.

10. Verify the PATIENT INFORMATION function activates the Patient Information screen. Enter patient information, display scheduled patients, display saved exams screen.
11. Verify the IMAGE DIRECTORY function allows you to review, print, and archive stored images and dose information.
12. Verify the IMAGE ANNOTATION function allows you to place markers, add comments and crop images.
13. Verify the SPECIAL APPLICATIONS function allows access to additional applications, if available.
14. Verify the CUSTOMIZE function allows access to the Customize screen.

Table Motion and X-ray Arm Motion Tests

Switch on the system. Initiate movement through the entire movement path. Indicate results in Checklist

Table Vertical

1. Upper vertical clearance OK? Verify ceiling clearance above tower as follows:
 - A. If not already done, install all covers for the X-ray arm.
 - B. Above the X-ray arm, note any obstructions such as lights, electrical fittings, plumbing.
 - C. If there are obstructions, move table to level, and operate to maximum vertical position. Move the cross-arm to both limits of longitudinal and lateral motion. Verify clearance with any obstructions in the ceiling.
 - E. Verify ceiling height of 9 feet.

CAUTION: *If ceiling is less than 9 feet high, or if obstructions prevent full movement of the X-ray arm, call Field Service Support for special instructions.*

2. Movement initiated from footswitch.
3. Soft start and smooth operation through entire range of travel.
4. Automatic stop in the bottom and top positions.

Table Tilt

Check the following table motions:

1. Movement initiated from hand control unit.
2. Movement initiated from footswitch.
3. Soft start and smooth operation through entire range of travel.
4. Automatic stop in Trendelenburg position (-20°).
5. Automatic stop in horizontal limit position (0°).
6. Automatic stop in vertical limit position ($+88^{\circ}$).

I.I./X-ray Arm

Check the following table motions:

1. Movement initiated from hand control unit.
2. Movement initiated from footswitch.
3. Soft start and smooth operation through entire range of travel.
4. Automatic stop in head-end limit position.
5. Automatic stop in foot-end limit position.
6. Movement initiates from Collimator VFD control panel.
7. No movement with opened film cassette door.

Tabletop Longitudinal

Check the following table motions:

1. Movement initiated from Hand Control.

2. Movement initiated from footswitch.
3. Movement initiated from Collimator Housing control panel.
4. Soft startup and smooth operation through entire range of travel.
5. Automatic stop in the head-end limit position.
6. Automatic stop in the middle position.
7. Automatic stop in the foot-end limit position.

Tabletop Latitudinal

Check the following table motions:

1. Movement initiated from the Hand Control.
2. Movement initiated from footswitch.
3. Soft startup and smooth operation through entire range of travel.
4. Automatic stop at each limit position.
5. Automatic stop in the centered position.

Patient Load/Unload

Note: This position equates to the automatic leveling function, and is set at the factory. If you are requested to set this position according to specific customer preference, a procedure for doing so is provided in the Calibration section of the service manual.

1. Move the table to random tilt and vertical positions, and X-ray arm to a random position.
2. Press the Patient Load/Unload button on the hand control.
3. Verify that the table and X-ray arm move to the preset positions.
4. Repeat the test using the controls at the Collimator Control panel.

Table and X-ray Arm Position Memory

Table movement circuitry has short-term memory that can store and recall up to three different random Table/X-ray Arm positions. The memory is valid for each position until you power down the system.

Options Testing

Refer to the Workstation or UroView 2800 Operator's Guide for operating instructions if necessary. Check the appropriate boxes in the corresponding section of the Checklist. Ignore any following sections that are non-applicable to the system.

Optional Video

If not already done, boot the system, and turn on the video source. The VSC will automatically sense the additional video source. Verify correct operation using PIP controls (see Flat Panel Display Video, Shift, and PIP, previously in this manual).

High Capacity Disk Test

Using the Image Directory verify that dynamic and static image(s) can be saved to disk.

VCR Test

1. Verify the VCR RECORD function.
2. Verify the VCR PLAY function.

IR Transmitter Test

1. Press the Remote Control Screen key and verify that the remote control screen displays on the monitor.
2. Use the cursor control to move the cursor to an executable button and press the ENTER key.
3. Press the EXIT key to exit.

Digital Hardcopy Camera Test

Verify operation of the digital hardcopy camera. Refer to the Operator's Guide Supplement if necessary.

Instant Film/Paper (Onboard) Printer

1. Remove the shipping pins from the printers front ventilation grill. There are two pins connected with tape which secure the thermal printhead.
2. Verify that an image can be printed to the Instant Film/Paper Printer. Refer to the Operator's Guide Supplement if necessary.

Thermal Printer Test

Verify an image can be printed to the thermal printer.

DICOM

1. If DICOM option is available: Contact the system administrator and ask them if they are ready to have the DICOM option installed.

If they are ready, have the system administrator complete the DICOM Network Questionnaire found as the last section of this document (Appendix C), then attach it to the *UroView 2800 Installation Checklist* and mail them in together. Then continue with DICOM installation.

If the Hospital is not ready for DICOM installation: photocopy the DICOM Network Questionnaire, leave it with the system administrator or equivalent, and schedule a time to complete DICOM installation. In the *Checklist*, record the scheduled time that DICOM is to be installed (indicate time by MMDDYY). Continue with system installation.

Note: *If the System Administrator completed a “copy” of the Network Questionnaire, attach the copy to the UroView 2800 Installation Checklist and mail them in together.*

2. Make electrical connections and configure the Workstation software.
3. Verify images can be archived and printed via the DICOM interface.
4. Verify that scheduled exams can be downloaded via the DICOM interface.

Finishing up

Cleanup includes greasing the table drive screws, installing covers, backing up configuration files, cleaning and touchup, and preparing items for return.

Greasing the Drive Screws

The following table drive screws must be greased.

- Lift and Tilt Drive
- I.I./X-ray Arm Carriage
- Latitudinal Drive
- Longitudinal Drive

Warning: The following procedures require operation of the table with access covers removed. While working inside the machine, follow applicable lockout/tag-out steps. Keep all body parts and tools clear while motors are running.

Lift and Tilt Drive

1. Verify that drive screws, guide shafts, spindle nut slides, and roller rails are free of any debris that could cause damage (see illustrations below).
2. Apply TUNAP TUNGREASE BS along the full length of the drive screws.
3. Operate the motors through a full cycle of motion, so that parts run on their mating surfaces and grease is spread thoroughly. Wipe excess grease from non-mating drive screw surfaces with a clean cloth.
4. Repeat this process through at least 6 cycles to thoroughly apply grease.
5. Wipe off old grease from guide shafts, spindle nut slides, and roller rails. Apply a thin coat of fresh TUNAP TUNGREASE BS along the length of each item.

I.I./X-ray Arm Carriage

1. If not done previously, position the table at full vertical, and remove the cover from below the I.I./X-ray Arm Carriage.
2. Verify that drive screw and roller rail surfaces are free of any debris that could cause damage (see illustrations below).
3. Apply TUNAP TUNGREASE BS along the full length of the drive screw.
4. Operate the motor through a full cycle of motion, so that parts run on their mating surfaces and grease is spread thoroughly. Wipe excess grease from non-mating drive screw surfaces with a clean cloth.
5. Repeat this process through at least 6 cycles to thoroughly apply grease.
6. Wipe off old grease from roller rails. Apply a thin coat of fresh TUNAP TUNGREASE BS along the length of each rail.

Latitudinal Drive

1. If not done previously, position the table at full vertical, and remove the cover from below the Latitudinal Drive Assy.
2. Verify that the drive screw and guide shaft are free of any debris that could cause damage (see illustrations below).
3. Apply TUNAP TUNGREASE BS along the full length of the drive screw.
4. Operate the motor through a full cycle of motion, so that parts run on their mating surfaces and grease is spread thoroughly. Wipe excess grease from non-mating drive screw surfaces with a clean cloth.
5. Repeat this process through at least 6 cycles to thoroughly apply grease.
6. Wipe off old grease from guide shaft. Apply a thin coat of fresh TUNAP TUNGREASE BS along the length.

Longitudinal Drive

1. Move table to horizontal position. Raise foot end of tabletop (supported by gas spring—see illustration below). Remove access plates located midway along table rails.

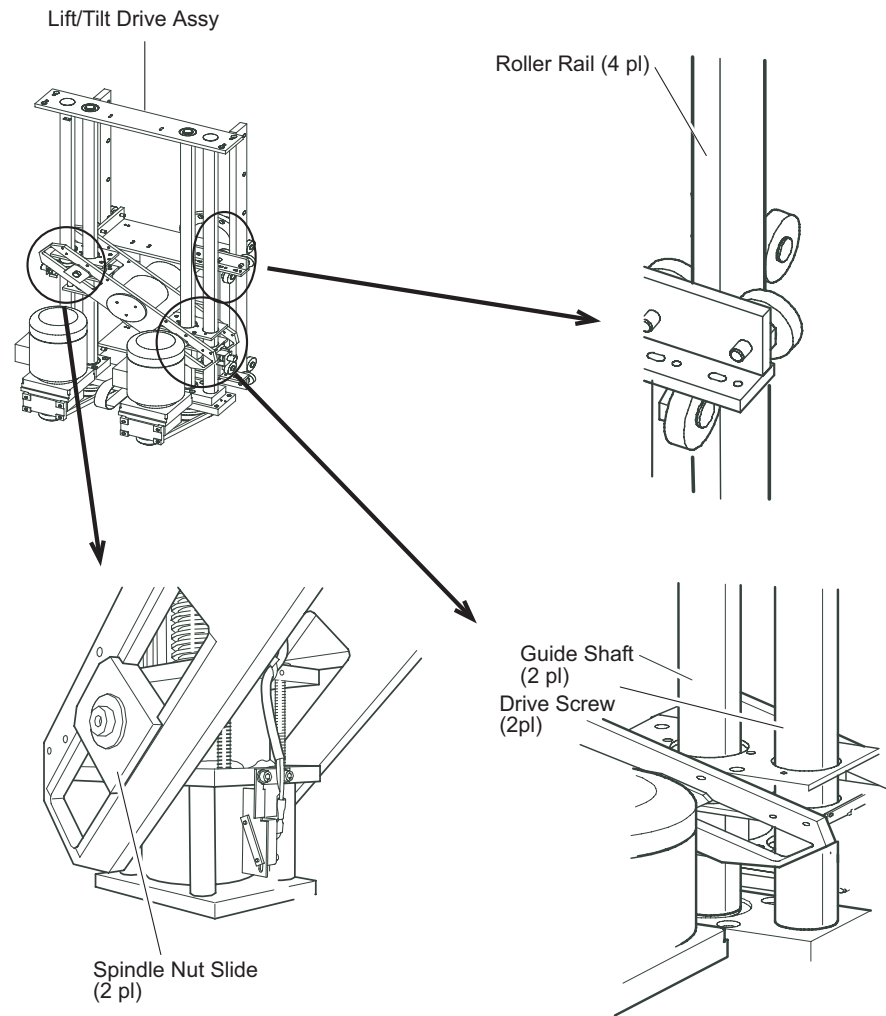
Warning: In the next step especially, follow applicable lockout/tag-out steps. Keep all body parts and tools clear while motors are running.

2. Through access openings, apply TUNAP TUNGREASE BS along the full length of the drive screws.

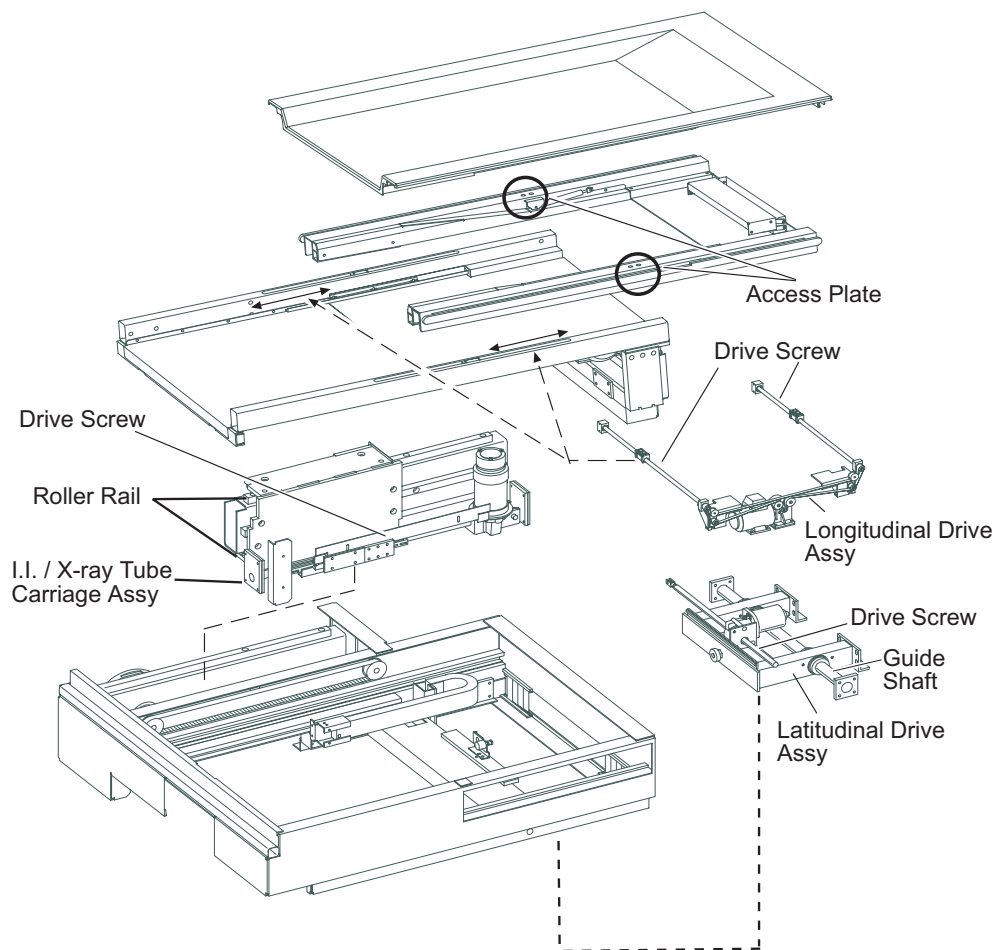
Uroview 2800 Installation Procedure

3. Operate the motor through a full cycle of motion, so that parts run on their mating surfaces and grease is spread thoroughly. Wipe excess grease from non-mating drive screw surfaces with a clean cloth.
4. Repeat this process through at least 6 cycles to thoroughly apply grease.
5. Re-install access plates and lower the tabletop.

Uroview 2800 Installation Procedure



Tower/Table Lubrication Points (View 1 of 2)

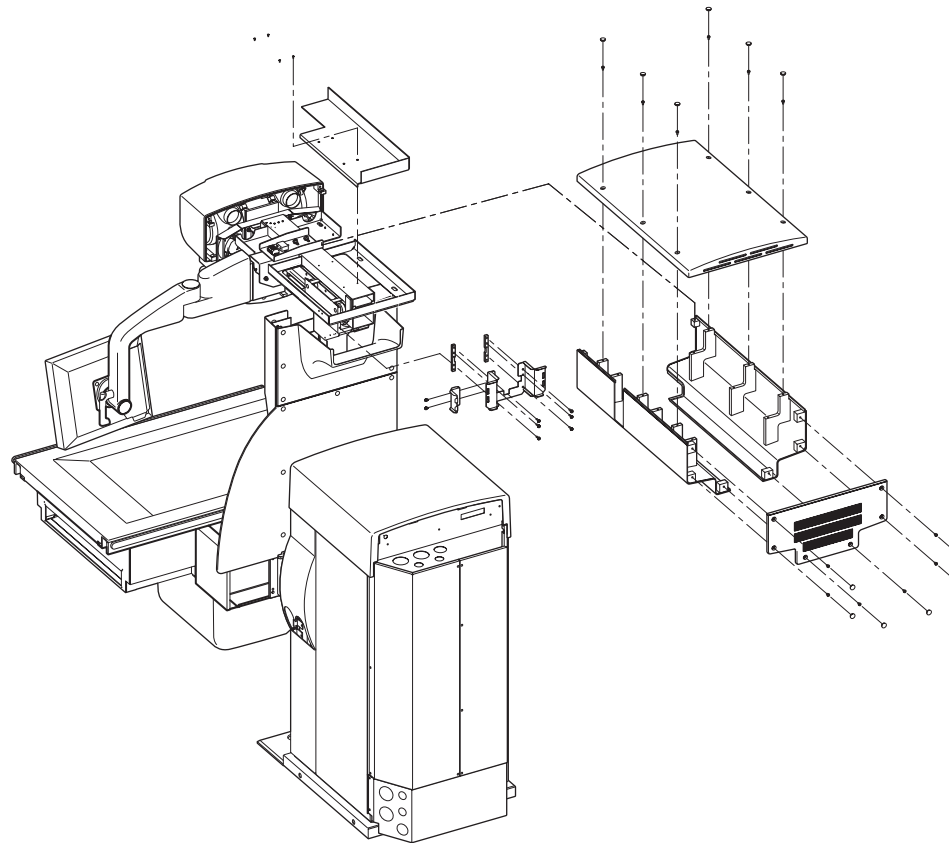


Tower/Table Lubrication Points (View 2 of 2)

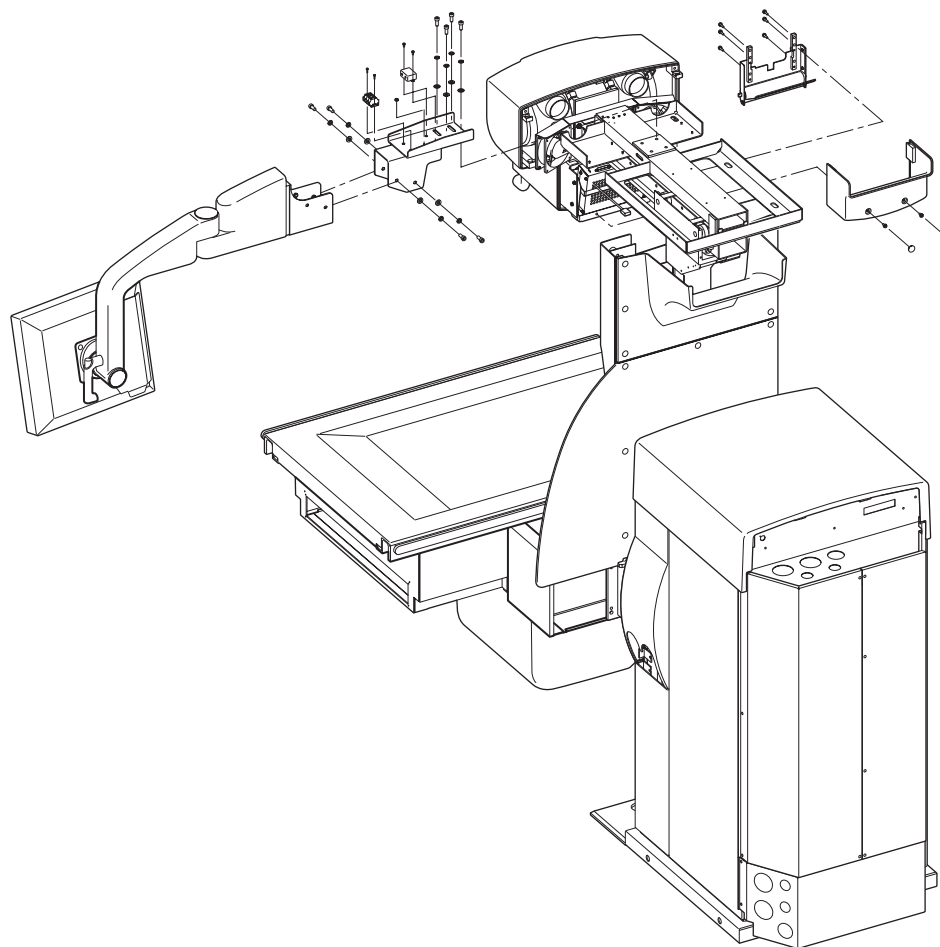
Note: Disassembled views are for illustration purposes only.

Cover Installation

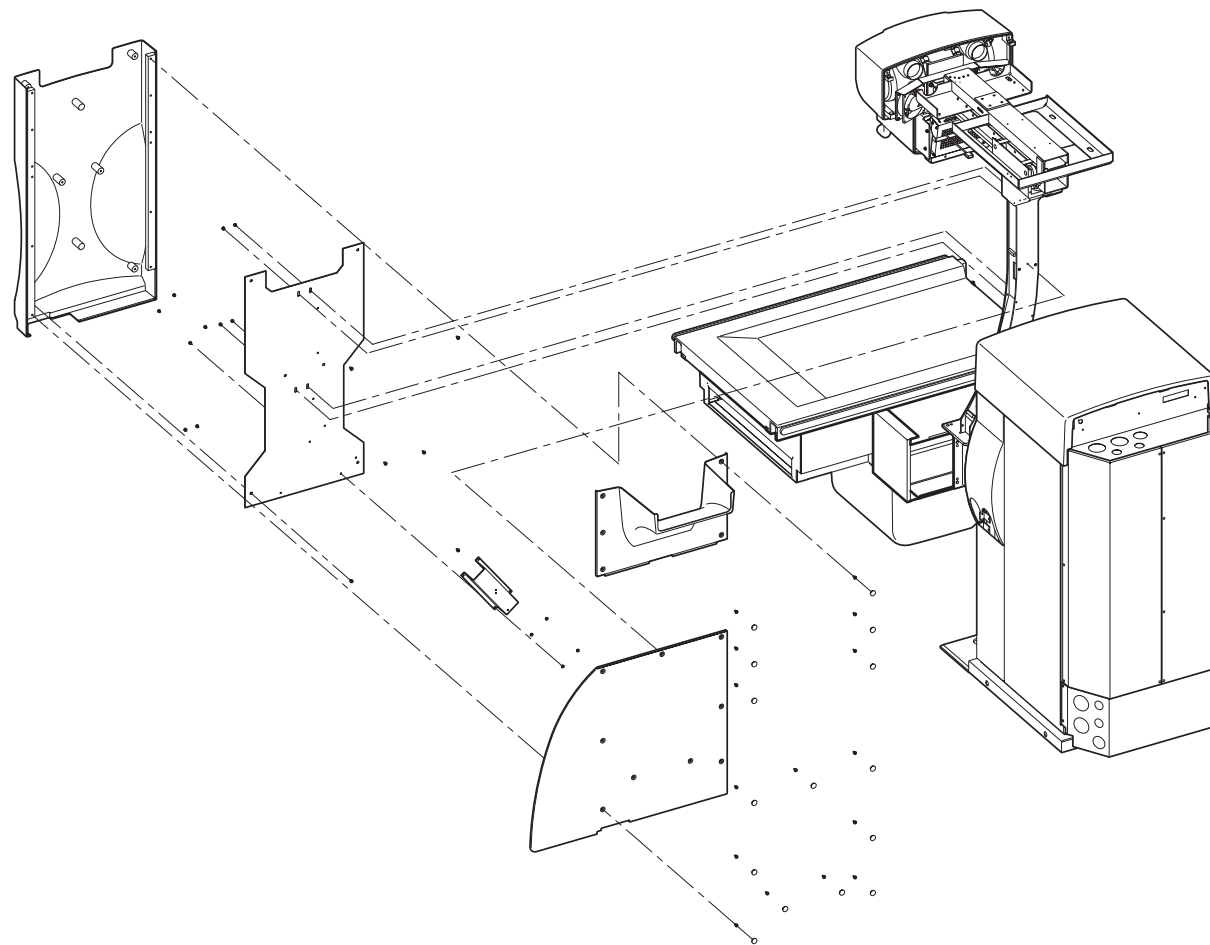
Use the following illustrations as guides for installing the covers. The callouts indicate the order in which the covers should be installed. If you need more information, use the Illustrated Parts Manual.



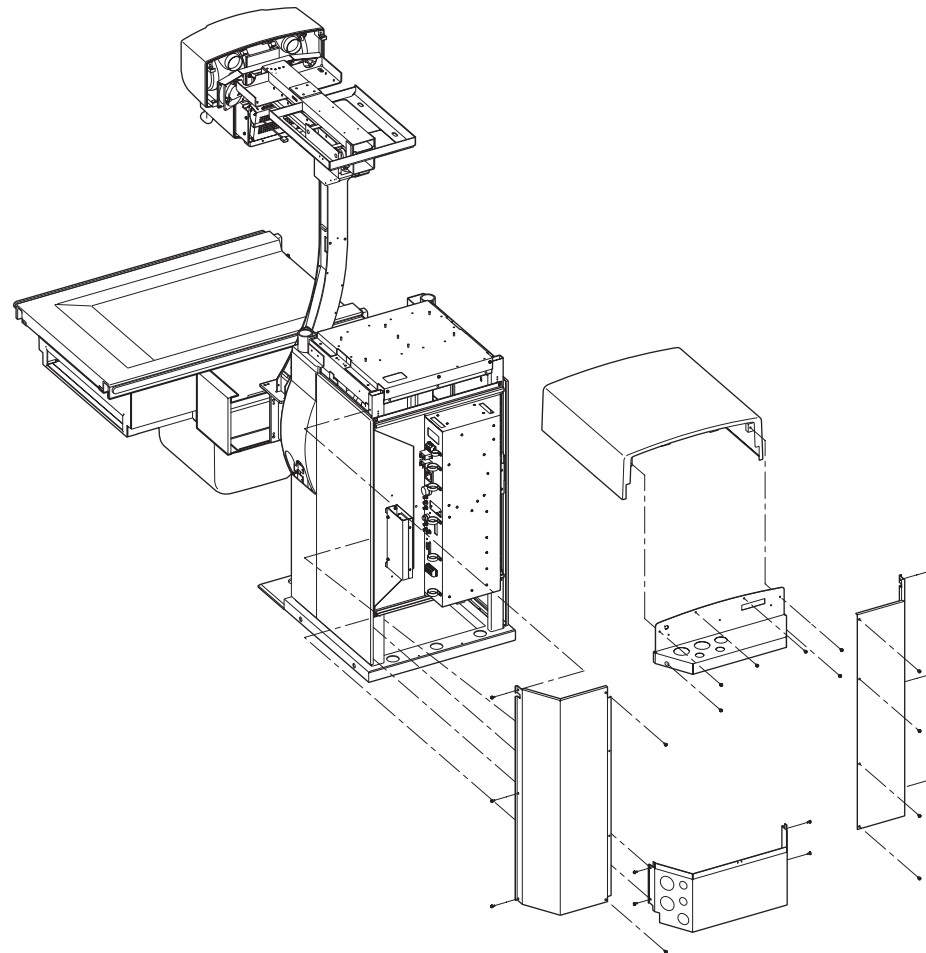
X-ray Arm Covers (View 1)



X-ray Arm Covers (View 2)



Tower Front Covers



Tower Rear Covers

Configuration Files Backup

Workstation

If the Remote Utilities Tool is not installed on the Laptop, install it now.

1. Connect the RUT cable between the Serial port on your Laptop and the ARCNET connector on the Workstation.
2. Double Click on the RUT Icon.
3. Once RUT starts Click on the Tools pull-down menu.
4. Then Click on Connect.
5. When the “Login Succeeded” Window appears click OK.
6. Click on the Tools menu and Select “Upload and Save All.”
7. When the Upload Windows Appears make sure that All is selected and click on OK.
8. The Save window appears. In the File Name Box type in the Serial Number of the System then click on Save. Repeat this six times for all the different files

Note: You will be saving six files with six different extensions, .cfg, .cfw, .clw, .clc, .fcl, .mal.

9. Then copy these files to a floppy disk. They are saved under the directory
C:\Program Files\rut\rut data files.
10. Leave the floppy with the system.

Tower/Table

If you have made changes to the current set of electronic parameters during the checks and tests of the preceding sections, you must save them into the system from the PC. Follow the instructions of Saving the Parameters in the PC, in the service manual.

Cleaning and Touchup

1. Install all hole plugs.
2. Wipe down the system.
3. Touch up the paint.
4. Silicone the tower base.
5. Clean up the urology room.
6. Place Operator's Guides in the back pocket of the workstation.

Preparing Items for Return

When you have prepared the items according to the instructions below, leave a message in the GE OEC voice mail box, number 9600, stating where the pallet and hardware can be picked up. Include the hospital name, street address, city and state.

Lifting Devices

Place the components of the lifting devices in their original packing crate. Make sure all items are included:

- Two side rails
- Two end rails with attaching hydraulic rams
- One cross-member
- Pump (jack) and connecting hydraulic hoses equipped with quick-disconnects
- Four wheels, 2 with brakes, 2 without brakes
- One subassembly lifting device

Pallets

Use the following procedure to return pallets for systems that have been delivered to locations within the United States.

1. Discard all wood pallets, except that of the tower/table.
2. Place the following items inside the lifting device shipping crate:
 - Workstation pallet metal braces and fasteners
 - Generator Shipping Bracket and fasteners
3. Remove all attaching shipping materials from the tower/table.
4. Place lifting device shipping crate on top of the tower/table pallet, then get the shipping room to strap them together suitable for shipment via truck.
5. Make appropriate arrangements for shipping.

Appendix A

DICOM Network Questionnaire

The purpose of this questionnaire is to collect and document information needed to complete the installation

Answer all questions.

Site Name: _____

Network Contact Person: _____

Phone #: (____) _____

E-mail address: _____

Network

1. Is there currently a network at the site? Yes ____ No ____
2. Does the site currently have a method for assigning IP addresses?
Yes _____ No _____

If yes, describe the method.

3. Is there a subnet router or Gateway on the network? Yes _____ No _____

If yes, what is the IP address of the router? ____ . ____ . ____ . ____

What is the subnet mask? ____ . ____ . ____ . ____

4. Will there be devices off site or in another department that are connected through a router to the main site?

Yes_____ No_____

If yes, list the router IP addresses and subnet mask for each remote site.

Router _____ . _____ . _____ . _____ Mask _____ . _____ . _____ . _____

Router _____ . _____ . _____ . _____ Mask _____ . _____ . _____ . _____

Router _____ . _____ . _____ . _____ Mask _____ . _____ . _____ . _____

PACs Server or Image Review Stations

- 1. List the server make(s) and model(s)_____
- 2. Server/Image Review Contact Person _____
Phone #: (____) _____
E-mail address: _____
- 3. List the information below for all PACs and/or Image Review Stations.

Common or Alias Name	IP Address	Port #	AE Title	Gateway Address (if applicable)
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____

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	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____
	_____ . _____ . _____ . _____			_____ . _____ . _____ . _____

4. Possible modalities: RF _ XA _____ SC _____

Printer

- 1. List the printer(s) make(s) and model(s) _____
- 2. Printer Contact Person _____
Phone #: (____) _____
E-mail address: _____
- 3. What is the printer(s) class? Grayscale _____ Color _____
- 4. List the information below for all Printers:

Common or Alias Name	IP Address	Port Number	AE Title
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		
	_____ . _____ . _____ . _____		

5. Printer setup:

Border Density (black or white) _____

Empty Density (black or white) _____

Copies _____

Print Priority (low, medium, high) _____

Destination (magazine, processor) _____

Medium Type (paper, clear, blue) _____

Film Size _____

Preferred Format _____

GE OEC DICOM Interface

1. IP address(s) of OEC equipment:

_____ . _____ . _____ . _____	Location or Serial #: _____
_____ . _____ . _____ . _____	Location or Serial #: _____
_____ . _____ . _____ . _____	Location or Serial #: _____
_____ . _____ . _____ . _____	Location or Serial #: _____